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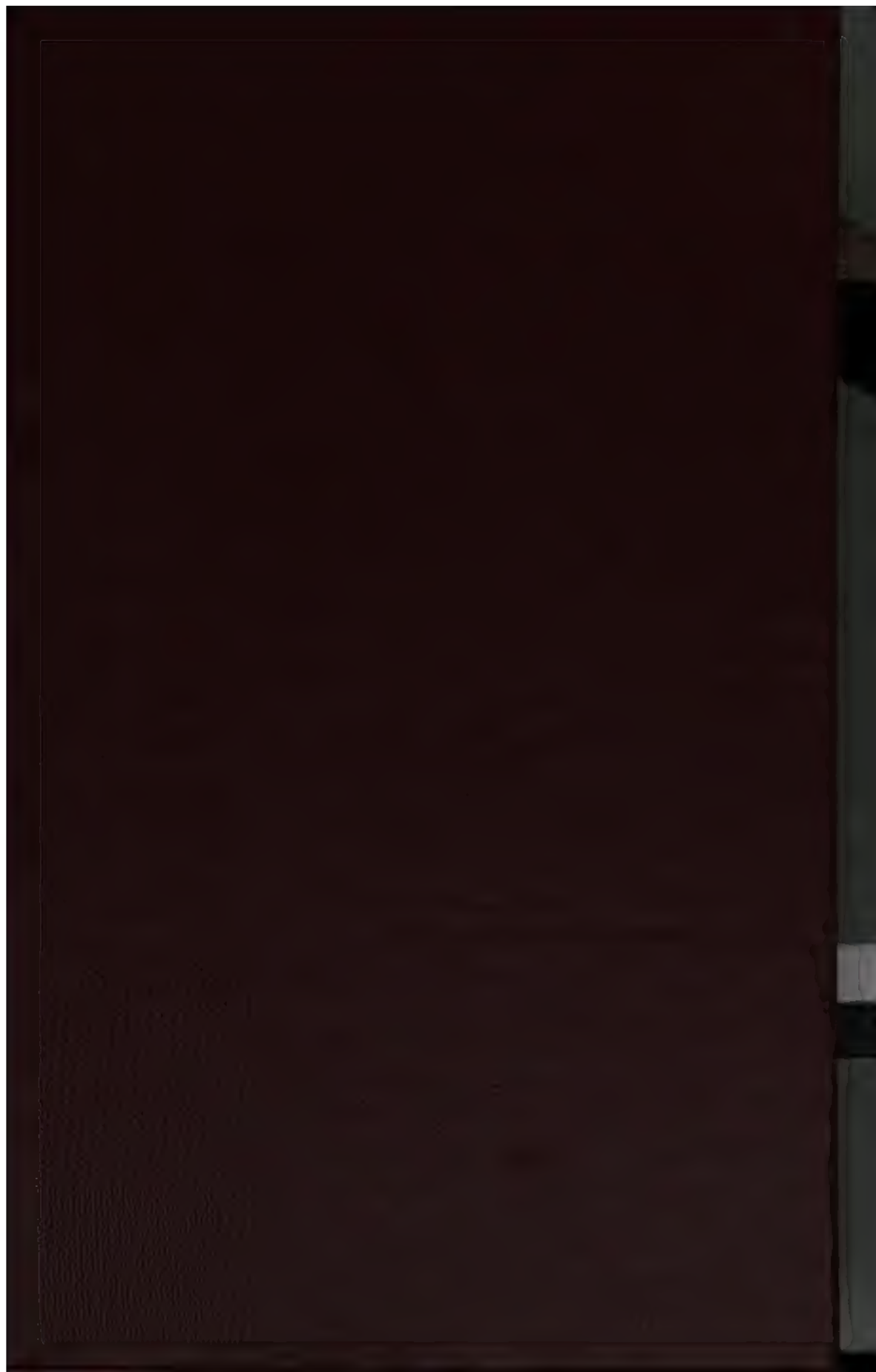
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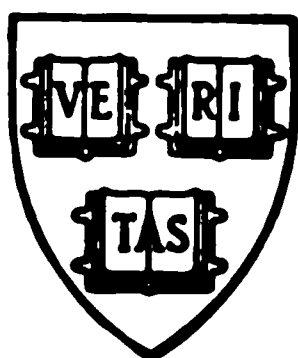
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SIXTH ANNUAL REPORT

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Cost of Production

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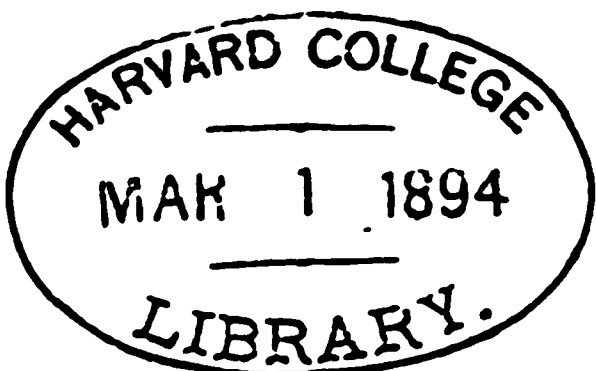
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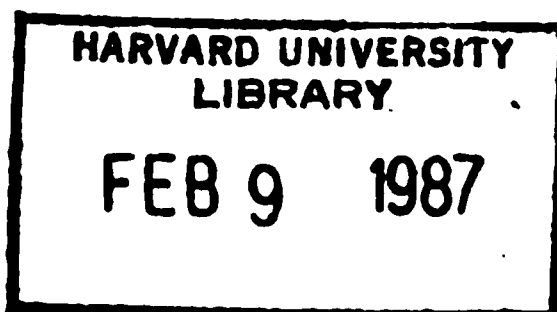


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MESSAGE OF THE PRESIDENT.

To the Senate and House of Representatives :

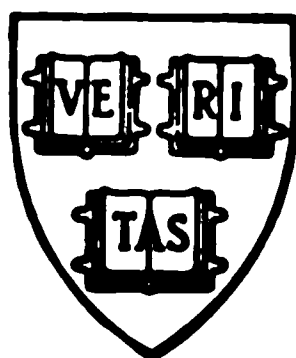
I transmit herewith the Sixth Annual Report of the Commissioner of Labor. This report relates to the cost of producing iron and steel, and the materials of which iron is made, in the United States and in Europe, and the earnings, the efficiency, and the cost of living of the men employed in such production.

BENJ. HARRISON.

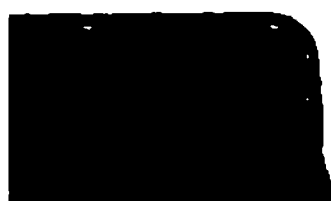
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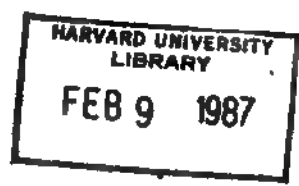


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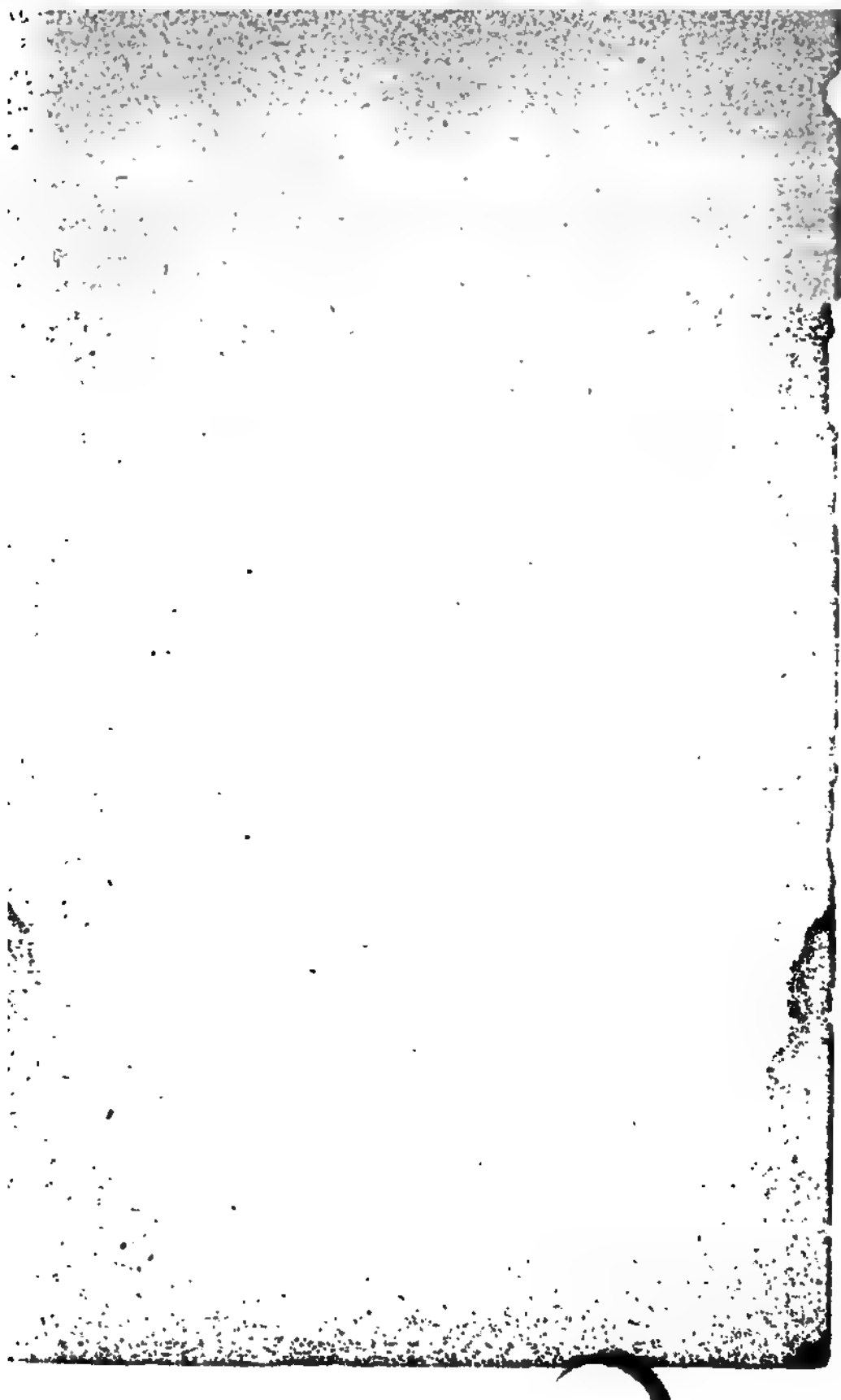
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MESSAGE OF THE PRESIDENT.

To the Senate and House of Representatives :

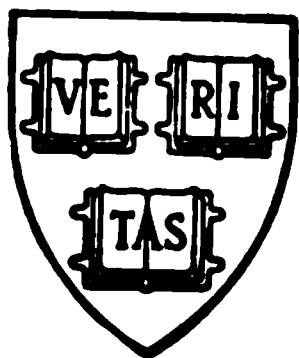
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BENJ. HARRISON.

EXECUTIVE MANSION,

Washington, D. C., February 14, 1891.

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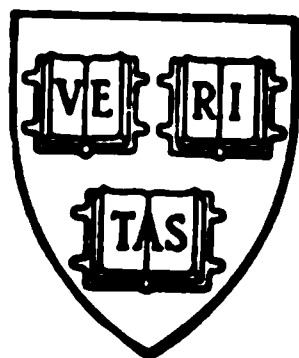
DEPARTMENT OF LABOR,
Washington, D. C., February 13, 1891.

SIR: I have the honor to transmit herewith the Sixth Annual Report of the Commissioner of Labor. This report relates to the cost of producing iron and steel, and the materials of which iron is made, in the United States and in Europe, and the earnings, the efficiency, and the cost of living of the men employed in such production.

The organization of a statistical office requires that the efforts of each individual attaché be merged into the complete work of all, and so one who is particularly prominent cannot be known or his specific services recognized, as is the case in other and larger departments, where the organization into bureaus and divisions enables the chief officer of such subdivision to make a report to his chief of the special work committed to his charge, such report becoming an integral part of the report of the head of the department. This investigation into the cost of production, the earnings and efficiency of labor, and the cost of living has tested the ability and endurance of our force to a very large degree, and so much difficult work has been performed, that it is but just to recognize those who have borne the brunt of the exacting duties essential to the success of the investigation. As this cannot be done by the reports of individual officers, I take pleasure in naming them.

Mr. Oren W. Weaver, the chief clerk from the inception of this Department (and of its predecessor, the Bureau of Labor), has given the strictest attention to details and the supervision of the working forces of the Department. His long statistical experience has been of the greatest value in every direction. The collection of material for the cost of production, the most difficult side of the field work, has been made by Messrs. Bernard, Gould, McGhee, Wandby, and (during the latter part of the investigation) Weber for Great Britain and the con-

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INTRODUCTION.

This report comprehends the results of an investigation, so far as iron, steel, bituminous coal, coke, iron ore, and limestone are concerned, carried on under the following provision contained in an act of Congress approved June 13, 1888, and entitled "An act to establish a Department of Labor," such act being the organic law of the Department:

SEC. 7. That the Commissioner of Labor, in accordance with the general design and duties referred to in section one of this act, is specially charged to ascertain, at as early a date as possible, and whenever industrial changes shall make it essential, the cost of producing articles, at the time dutiable in the United States, in leading countries where such articles are produced, by fully specified units of production, and under a classification showing the different elements of cost, or approximate cost, of such articles of production, including the wages paid in such industries per day, week, month, or year, or by the piece, and hours employed per day; and the profits of the manufacturers and producers of such articles; and the comparative cost of living, and the kind of living.

Immediately after the passage of this law plans were formulated for collecting the information specified, and practical operations under these plans were commenced in December, 1888. The first matter to demand attention was the selection of industries to be investigated. As the law clearly specifies that articles dutiable in the United States should be selected, it became necessary to select not only those articles upon which a considerable duty is collected, but those for which a clearly defined and standard unit could be established. An examination of the statistics of imports reported by the bureau of statistics of the treasury department showed the following facts relating to the leading imports:

DUTIABLE VALUE OF CERTAIN IMPORTED PRODUCTS.

[Dutiable value of all imports for the year ending June 30, 1889, \$483,644,574; for the year ending June 30, 1890, \$523,641,780.]

Products.	For the year ending—			
	June 30, 1889.		June 30, 1890.	
	Dutiable value.	Per cent. of all imports.	Dutiable value.	Per cent. of all imports.
Sugar, molasses, candy, and confectionery	\$81, 240, 845	16. 63	\$79, 734, 684	17. 14
Wool, hair of the alpaca, goat, and other like animals, and manufactures of.	70, 839, 457	14. 43	71, 846, 518	13. 73
Flax, hemp, jute, and other vegetable substances, and manufactures of.	46, 174, 036	9. 45	48, 305, 306	9. 23
Milk, manufactures of.....	25, 122, 766	7. 19	23, 694, 374	7. 39
Cotton, manufactures of.....	26, 803, 942	5. 49	29, 912, 055	5. 71
Glass and glassware.....	7, 713, 921	1. 58	7, 352, 513	1. 40
Iron ore, iron and steel, and manufactures of	43, 685, 451	8. 98	44, 005, 215	8. 43
Total.....	311, 491, 410	63. 75	322, 894, 722	61. 09

From the foregoing statement it will be perceived that, eliminating sugar, molasses, candy, and confectionery, a very large percentage of duties is collected on the textiles and iron and steel, using these terms in their general sense. The investigation under the law, then, was shaped to comprehend iron and steel, and the materials of which iron is made, the textiles, and glass. All the results of the investigation will be contained in a series of reports, the present comprehending, as stated, the results so far as iron and steel and the materials of which iron is made are concerned. The results relating to the other industries will be reported later in the year.

For the purpose of clearness of presentation this report is divided into three parts. Part I relates to the cost of production, Part II to wages (time and earnings) and the efficiency of labor, and Part III to the cost of living.

PLANS ADOPTED.

After the fullest consideration of the instructions of Congress and consultation with manufacturers in different parts of the country it was determined to make the investigation as broad as possible. To carry on a searching and analytical study of the cost of production in the industries selected, schedules were arranged, in order that all the information collected from different countries should be upon a uniform basis, and these schedules were formulated on the advice of practical manufacturers.

The investigation assumed three great features, the first relating to the cost of production of the articles selected, which must be articles having definite and equal units, such as a ton of Bessemer pig iron rather than a steam engine or mowing machine, the information to be gained from the account books of the establishments producing the goods. The second feature covered the rates of wages, time, earnings, and efficiency of the labor connected with the establishments furnishing the information on the cost of production, all the information under this feature to be secured from the pay accounts of the establishments. The third feature was the collection of facts covering the cost of living, total earnings, and expenditures of the men employed in the establishments called upon to furnish data relative to cost of production, earnings, and efficiency, these facts to be gathered from the men themselves. This wide and comprehensive plan, as originally adopted, has been carried out relative to the industries named, and to an extent and with a success far beyond the expectations of the officers of the Department when it was adopted.

Of course the results of this great inquiry, as must be the case in all other investigations, do not reach the statistical ideal of the collection and presentation of important facts; but the result can be honestly designated a "statistical triumph," in securing which many intelligent, fearless, well-informed manufacturers have been willing,

for the benefit of the world, to give all the facts called for relating to their business. It is a delicate matter to ask a manufacturer to give all the facts and figures relating to the cost of producing his goods; but manufacturers, like other people, are becoming familiar with the idea of governmental inquiry into conditions, and are more and more convinced that not only does no harm come to them from an honest statement of the facts sought, but on the contrary that great good may be derived from such statement. It is a source of very great regret that the names of the companies and individuals who have contributed to the value of this investigation cannot be stated. It would be a pleasure to thank them publicly for their generous and courteous treatment of the Department through its representatives in Europe and America. A statement of the names of such concerns would alone emphasize the truthfulness of this report. Of course not every manufacturer who was asked to furnish the information accepted the invitation; but 618 establishments responded and have contributed the facts necessary for the production of this report. These establishments are distributed as follows:

ESTABLISHMENTS EMBRACED IN COST OF PRODUCTION TABLES (a).

Industry.	Establishments.
Pig iron	118
Muck bar iron	38
Finished bar iron	29
Miscellaneous iron	20
Steel ingots	21
Steel rails	13
Miscellaneous steel	32
Bituminous coal	173
Coke	45
Iron ore	92
Limestone	7
Total	618

a In a preliminary report on the cost of production of iron, steel, etc., made to Congress July 1, 1899, 412 establishments were presented. This full report, then, comprehends 206 more establishments than were covered by the preliminary report; as these are inserted at their proper places the numberings in the preliminary report could not be preserved in this more complete statement.

While so large a number of establishments have responded to the call of the government, the difficulties in the way of carrying out the instructions of Congress as given in the act cited have been almost insurmountable. They were quite fully appreciated at the start, but they naturally increased as the work progressed. That the design of the investigation was to obtain the facts from books of account and pay-rolls of establishments clearly indicates one feature of the difficulties encountered. In all cases parties have been assured that the reports should be so made that in no wise could there be an identification of their individual establishments, therefore the names of establishments are omitted and numbers take their places. The difficulties in securing information from iron and steel manufacturers were not encountered

first by this Department. July 17, 1885, and again on a later date, Hon. Daniel Manning, then secretary of the treasury, undertook to collect information relating to the cost of producing iron and steel from the iron and steel manufacturers of the country through the officers of the American Iron and Steel Association, which association in its reply to the honorable secretary, of date November 10, 1885, stated:

In our replies to the communications referred to we have expressed our entire willingness to aid in the collection of information from these manufacturers. At the same time we expressed the opinion that the value of our work would be impaired if the department (treasury) should also address its inquiries directly to individual manufacturers. We now regret to say that the information we have obtained is not so full or so comprehensive as we have desired that it should be.

The American Iron and Steel Association embraced on the 1st of January of the present year (1885) 171 companies, 77 firms, and 22 individuals, or a total of 270 members. This membership was directly identified with the manufacture of iron and steel in every form in every state of the Union that contains an iron or steel industry. Besides this absolute membership the association regularly corresponds with all other iron and steel manufacturers in the United States.

Suitable interrogatories were promptly prepared, and application for the desired information was made early in August last to all iron and steel manufacturers. (In the phrase "iron and steel manufacturers" we include the owners or operators of blast furnaces, rolling mills, and steel works, and the producers of hammered iron blooms.)

Early in September we again addressed all manufacturers who had not responded to our first communication. Copies of the interrogatories referred to and of the circular letters accompanying them were promptly transmitted to the treasury department. Of the more than 550 companies, firms, and individuals addressed by the association less than one-fourth have responded in writing; of this number several have refused to give any information whatever, and many others have given very imperfect information. Some have doubtless addressed the department directly, and we understand that replies will also be made by a few organizations representing special iron or steel interests. Of the large number who have not formally responded to the interrogatories of the association many have personally given reasons for not responding, which were similar to those assigned by others in writing. This unwillingness or refusal to respond to a call for information from the officers of this association is an experience to which we are entirely unaccustomed.

The inquiry naturally suggests itself, Why has the information been withheld by so many manufacturers? Various reasons for this action may be assigned. Many manufacturers do not keep their accounts with sufficient minuteness to enable them to give the information requested; others naturally shrink from exposing the details of their business to any person, fearing that they might even by accident be seen by their rivals; others do not care to take the trouble to compile the details; others believe that the details if given would fall into the hands of government officials who are not experts, and who would, therefore, be liable to misunderstand or misconstrue them; while others again decline to give information because they are earnestly opposed to any further revision of the tariff, and think that if they would give the details requested they would thereby be committing themselves to the

support of a policy which they do not believe in. Whether or not all these reasons can be accepted as satisfactory we must respect the book-keeping difficulties, the earnest convictions, and even the timidity of business men who represent large interests and have much at stake.

If the Iron and Steel Association met with the difficulties recited in their reply to the honorable secretary of the treasury, it would not have been surprising if the Department of Labor had met with greater ones. It is gratifying, however, to know that with the exception of the manufacturers of steel rails producers have made no very great opposition to the inquiry ordered by Congress. The difficulties have been inherent ones, and not those arising, as a rule, from temper or indisposition.

The methods adopted by the Department of Labor aided the prosecution of the investigation to a very large degree. Experts and agents were sent directly to the producer. The experience of the Iron and Steel Association, and the experience of this and other departments and bureaus engaged in the collection of industrial statistics, has for many years condemned the correspondence method of collecting such facts. It has, with rare exceptions, been a failure. The personal method, that of sending well-informed, well-instructed agents to obtain in person what is wanted, is the only one that will secure satisfactory results. The advantage of this latter method is that a well-informed man on the spot can answer all objections and show clearly all advantages. The plan adopted comprehended an investigation in all parts of the United States where iron and steel are produced, in Great Britain, and in the iron and steel producing countries of the continent of Europe.

The results of the investigation will be dealt with under the analysis of tables and at the proper points. It may be remarked in general, however, that the fullest confidence can be placed in the trustworthiness of the report. It is weak here and there, especially in the steel rail industry, as already indicated, but the weakness is the consequence of the impossibility of securing what was wanted. If we have not a sufficient number of establishments in any industry to be considered representative, it is not the fault of the Department. It is our opinion, however, that the number and distribution of establishments is adequate to establish the representative character of the report. If the question is raised, Why did not the Department give facts for great steel rail manufactories or other works which would show, perhaps, more clearly a greater variety of products, or which would represent different processes and methods? the answer is, that such establishments could not be induced to give the information sought. Whatever omissions may be discovered, not only in range, but in the character of the information given, are in no respect the fault of the Department. This may be said, however, as to the former—the range of facts covered—that out of the innumerable inquiries that might be suggested as likely to elicit data of value it was necessary to make a selection in order to confine the work within reasonable limits. The Department has aimed to make

a judicious selection, but it will not be strange if some find information lacking on minor points of significance in their estimation. Similarly, of the form of presentation for each of the many tables, it may be stated in advance that the possible needs of all classes of persons who will have occasion to consult them have been carefully considered, and such arrangement finally adopted as seemed best on the whole. There may be exclusions which somebody wants to see, inclusions which some will deem superfluous, and an order of grouping the facts which will not emphasize relations some would desire to have brought out. No claim is made in these things that in devising and presenting nearly 400 original tables, as is the case here, nothing has been forgotten or neglected, as such a claim would be absurd; but it is claimed that there has been conscientious thought bestowed on all these little matters, believing that it is in the aggregation of little perfections that a symmetrical whole is developed.

WHAT IS MEANT BY COST OF PRODUCTION.

By cost of production (a) we mean, for the purposes of this report, the expense of production. The term has not been used in any technical or metaphysical sense, although from the facts reported the economic cost of production as indicated by the waste or consumption of material or of time can be ascertained. In arriving at the cost of production all expense for interest, insurance, depreciation of the value of plant, and (where existing) royalty to the owners of the soil has been excluded, as have also all charges for freight of product to place of free delivery. The facts upon these points, except the last, have been collected from such manufacturers as have seen fit to give them and have been tabulated separately, so that any one who does not agree with the position of the Department can for himself ascertain what the cost of production would be with these excluded elements added. For the purpose of this investigation it has been deemed sufficient to include only those elements of cost which are universal, positive, and absolutely essential, that is, those elements of cost that are common to all producers and which must be borne in order to bring out the completed product. Interest can hardly be called an element of cost of production because

a The term cost of production is used in at least four different meanings in economic discussion.

1. It may mean the fatigue or irksomeness of labor. Those engaged in extractive industries are most conscious of this meaning. Thus a farmer, doing much of his work with his own hands, instead of paying for it with wages will often count the cost of this or that farm operation, or this or that crop, in terms of his own effort and weariness. Prof. J. E. Cairnes, in his "Leading Principles of Political Economy Newly Expounded," (New York, Harper & Brothers), insisted that in economic theory cost of production must always mean the fatigue of muscle and brain. Wages, interest, etc., he said, are not the cost of production; they are the rewards of production. Labor and enterprise drift to those places and into those

of the variation of the amount of interest which enters into the estimates of concerns.

Moreover, an establishment may have no interest money to pay, considering its plant as "sunk," or it has charged off a certain percentage each year for a sufficient number of years to wipe out the entire cost of plant, and so thereafter interest can play no part in the balance sheets or accounts of the concern. The whole amount charged off has been paid out of profits, and could not be reckoned as any part of the cost of producing a single ton. The man who pays a large interest must be content with a smaller profit. If he borrows his capital he reduces his margin of profit. The concern that has completely wiped out the cost of its plant, through a systematic and continued charging off, has the advantage, and its subsequent profits are larger. Some manufacturers in different industries charge, for instance, 6 per cent. on the entire plant to the cost of production, dividing it over the year's output. In such a case, if the goods are sold at this cost, the manufacturer claims that he has made no profit, when in fact he has made 6 per cent., and this 6 per cent. offsets the interest he would have obtained for his capital invested in some other direction. He loses his personal services, however; or, to state it differently, he secures 6 per cent. for the care of his capital. Most European producers of iron and steel, and all in America inquired of, have been found to consider their plant sunk

occupations in which they get the greatest rewards in proportion to cost, i. e., the greatest wages and profits in proportion to exertion of body and mind.

2. Cost may mean the destruction of one objective or material utility in the production of other utilities. Agriculture uses up seed, grain, manures, and implements, destroying the utilities embodied in them, to produce further harvests; manufactures and transportation destroy coal to produce steam power. We have to use "cost" in this sense whenever we inquire whether a nation is increasing its material means of satisfaction by the ways in which it consumes its resources.

3. Cost may mean the sacrifice of an alternative utility, opportunity, or value. The blacksmith might be able to make \$1.50 a day as an agricultural laborer, when any other man in the neighborhood could make but \$1.25; but, being able as a smith to make \$2 a day, he stays at his forge. He will estimate the cost of production of his work at the value of his best alternative employment—the \$1.50 a day. It is in this sense we constantly use the word "cost" in discussions of international trade. Thus a nation that could produce iron at \$11 a ton may import it at \$13, simply because the labor and capital that would produce a ton of iron at \$11 may be productive of enough wheat or cotton to buy a ton and a half or two tons, at \$13.

4. Finally, cost may mean the sum of all the prices paid for the materials and labor and sacrifices involved in production. This is what the business man ordinarily means by cost.

Cost in this latter sense is not always a cause of value or price; that is, the price of a product is not necessarily determined by its cost of production in terms of the prices of labor and materials. On the contrary, the price of the final product may determine how much the producer will offer for materials and labor. It is impossible here to trace out all the relations of cause and effect, but one general principle will hold good. More than one final product is commonly made from the same raw material, and the prices of those products, even after allowing for all other differences in expenses, may be very unequal. Nevertheless, the various producers will buy their raw material at substantially the same price, and that price cannot exceed the market value of the least valuable product made from the material. It is therefore the least valuable product that determines the cost of production for all other products made from the same raw material, or by substantially the same kind of labor. This cost of production, acting on the supply of the other products, tends to bring down their market prices to an equality with the least valuable product; that is, it becomes, in their cases, a cause of value.—Prof. F. H. GIDDINGS, Bryn Mawr College.

to start with, and have advised the Department that the only influence which the value of plant can have upon the cost of production is through charges for repairs, and not through interest added to the positive elements of cost.

The depreciation of value of the plant, which often occupies so much of the attention of writers when speaking of the cost of production, offers a very great stumbling block in any statistical study of the cost of production. In arriving at our conclusions, which resulted in not considering this as a positive and universal element in the cost of production, we have been greatly aided not only by manufacturers themselves but by a work on *The Depreciation of Factories and their Valuation*, by Ewing Matheson, M. Inst. C. E., published in London in 1884. The present writer has freely used Mr. Matheson's language wherever it has been applicable to this discussion.

It is true that the cost of repairs should be charged into the cost of production, and it is believed that the full force of the idea that depreciation should enter into the cost of production has in this way been met; that the integrity of the influence of depreciation has been preserved, and without the difficulties which would arise from an attempt to add any sum representing depreciation.

Deterioration of a plant by time and use, the appraisement of the loss and its allotment in the accounts, are matters of great importance, of course, in the economy of management; but no fixed rules or rates of depreciation can be established for general use, because not only do trades and processes of manufacture differ, but numerous secondary circumstances have to be considered in determining the proper course. The question of depreciation cannot be separated from that of maintenance, and in theory one may be said to balance the other. If this is the case, the absolute replacement of some portion of the plant every year may thus maintain an average aggregate value. In only two kinds or classes of plant, however, can such an exact balancing of loss by repairs and renewals be ventured on; one, where the plant wears out so quickly as to need replacement at short intervals, affording constant proof by the mere continuance of working that not only the earning power of the factory is maintained, but also the capital value; and in a second class, that of undertakings so large and permanent as to afford a wide average of deterioration and renewal over the whole plant. In the conduct of works there is often a natural tendency to charge off for depreciation in proportion to the profits rather than to the deterioration, and where such a tendency is crystallized into action, the amount charged off being large in a year when the profits are large, the cost of production, should such amount be considered as an element in it, would be thrown out of legitimate proportion.

In the case of a very large plant, where there is a considerable annual outlay for renewals as well as for repairs, such expenditure, if charged to profit, may fairly balance the average deterioration of the whole;

but to secure this there should be a very ample margin, through the increase of the plant every year, for without this there would be a risk that a gradual lessening of the total value of buildings or plant would take place, ultimately involving considerable expenditure to restore its earning capacity, and this great expenditure, if added to the cost of production, would again distort the legitimate proportions thereof. In the accounts of a plant it is difficult, even for those engaged in its management, always to distinguish between the expenditure for renewals chargeable to capital and that due to deterioration; and to those outside the management it is quite impossible without careful investigation. Actual additions to the size or capacity of a plant should be largely reckoned as increasing the fixed capital, but such an increase may be wholly or partially neutralized by deterioration. There are various methods of estimating the depreciation of a factory or plant, but it may be said in regard to any of them that the object in view is so to treat the nominal capital in the books of account that it shall always represent as nearly as possible the real value. The most effectual method of securing this would be, if it were feasible, to revalue everything at stated intervals, and to charge off whatever loss such valuations might reveal without regard to any prescribed rate. By such a plan the deterioration due to a period of constant working and of great profits, or to an average or idle year, might be properly allotted.

Such a system is adopted oftenest in factories or works where the trade and plant are of so simple or uniform a kind as to allow it without difficulty. In some manufactories there are a few chief items of plant which are more important than the rest, and whose condition and value therefore need special consideration. But as a rule it will be found that charging repairs to cost of production, and great extensions or increase of capacity to capital, serves the best economic purpose in securing the legitimate cost of production.

In the case of machinery, deterioration depends on so many circumstances, some of which relate to the machine itself, and others to the mode of using it, that it is difficult to establish a just and uniform rate of depreciation which could with integrity be chargeable to the cost of production. Sometimes a machine as a whole may continue serviceable, while important parts may become obsolete. Thus, in an iron rolling mill, new rolls may be cut to produce a certain pattern of bar iron, and if this pattern be of a standard shape and size, constantly in demand, depreciation may be based on its probable durability and the number of tons of iron which the rolls will produce before they are worn out. If, on the other hand, the pattern be peculiar in shape or size, a higher rate of depreciation is necessary, and it may become proper to charge the whole cost of the rolls to the first output of bars. In this latter respect the rolls must be treated like foundry patterns, which are in some cases charged to one set of castings for which they have been specially made, and at another time, as stock or standard patterns, to

capital. There are numerous other industries where a large proportion of the cost of manufacture is for the design and patterns, and a due depreciation in value would become of great importance.

There is a very wide divergence of practice, even in well-managed factories, as to the proper rate of depreciation for machinery. To be on the safe side a concern sometimes commences by charging off annually 10 per cent. from the cost of all machinery, especially when the concern is doing a profitable business. In other cases the records of many years' working may show that $2\frac{1}{2}$ per cent. is sufficient. In engineering factories the rate which will probably meet the depreciation will generally be found between 5 and 10 per cent. Where the work is of a moderate kind which does not strain the machines severely, and where the hours of working do not average more than sixty per week, 5 per cent. would generally suffice for machinery, cranes, and fixed plant of all kinds, excluding steam engines and boilers. Where there is a diversity of machinery and plant, as in a cotton mill, prominent cotton manufacturers, with many years' accounts to enable them to form a correct judgment, have informed the Department that 5 per cent. seems to be an appropriate rate to be added to cost of production when this method is resorted to; but such a rate would be quite insufficient for the machinery of a rolling mill. While a rate of $7\frac{1}{2}$ per cent. might be supposed sufficient for the first few years, say four, the valuation at the end of that period might show that some rate between 10 and 20 per cent. would be necessary to meet effectually the depreciation in value due to wear and tear, and to the fact that the machinery is likely to become old-fashioned.

Steam engines and boilers, if classed separately from the other machinery of a plant, would generally require a higher rate of depreciation, and a further separation would require that the boilers be given a rate higher than engines. The make of the boilers and engines would have much to do with the depreciation. In trades where steam engines, steam hammers, furnaces, and boilers form a large proportion of the total plant of machinery, they would have to be classed separately from the other machines, or the rate of depreciation for them should determine that for the whole; but it is often considered expedient to exclude from such a general rate of depreciation certain things, such as patterns and foundry boxes, or to class them separately. Where the depreciation is rapid, as in boilers and furnaces, the need for renewal forces itself on the attention of users, and the justice of charging expenditure on this account to profit becomes obvious, and of course to charge such to cost of production would be entirely wrong. From these considerations, and to avoid inharmonious and incongruous elements of cost, we have, to cover all contingencies and the variations of years, included repairs in the cost of production instead of undertaking to determine or accept any specified rates of depreciation by individual concerns.

The charges for insurance cannot justly be considered as an element of cost of production. It is a variable and often unknown quantity. Many proprietors prefer to carry their own insurance, while others prefer to place their risks in insurance companies. This takes the cost of insurance out of the catalogue of positive and universal elements of the cost of production.

The royalties paid to the owners of the soil in the cases of coal mines, ore mines, or limestone quarries, operated by persons other than the owners, have not been included, because such charges are not positive and universal, and must of necessity correspond to the interest charge of the operator who owns his mine. In other words, the royalty paid by the lessee represents what would be the interest on capital invested were he the owner, and is not considered as a legitimate charge against cost of production, although affecting profits or selling prices.

The charges for freight of product from the works to place of free delivery have not been included as one of the positive elements of the cost of production, because they are manifestly a part of the cost of selling the finished products, and the plans of this investigation could necessarily carry the product only to the point of finishing at the works. Moreover, such charges are variable, the products of many mills being sold free on board at mills, and of others at such a variety of points that no usable statement could by any possibility be obtained. This latter reason prevented the Department from showing among the additional or theoretical charges the comparative advantages of the several establishments in respect to their proximity to market.

Notwithstanding these considerations, there are many students of economic subjects, as already intimated, who regard some one or all of these elements—interest, insurance, depreciation, and royalties—as legitimate elements in arriving at the cost of production, and for that reason a separate tabulation of such data on them as came to hand is appended. It will be found, however, that in nearly all cases their influence upon the cost of a unit, like a ton of pig iron or a ton of steel rails, is so slight as not to invalidate the statements made in the tables where they have been excluded.

COST OF PRODUCTION AS AFFECTED BY MARKET PRICE AND FREIGHT OF MATERIALS.

Another disturbing element in ascertaining exact cost of production is the market price at which materials are charged. A manufacturer of pig iron may also be the producer of the ore or coke, coal or limestone which he uses, or he may be the producer of some of these materials and a purchaser of others. If he is a purchaser he is entitled to charge as a legitimate element of cost what he has to pay in the market for the materials, and it sometimes occurs that where a manufacturer produces his own ore or other materials, he considers it perfectly legitimate in making up his cost to enter what he produces at the

market price he would have to pay for it provided he purchased. - This statement will often account for discrepancies in the cost as charged for different materials. The influence of this is more largely felt in the production of steel rails, where the fluctuation of prices of pig iron is great, as shown by the speculation in pig iron in Great Britain. It is extremely difficult to arrive at the specific elements of cost in the production of pig iron in Great Britain, on account of the constant gambling there in pig-iron warrants. This species of speculation has been carried to such a reckless extent that a measure has been introduced into parliament for regulating dealings in pig-iron warrants. The measure aims at such speculative dealings, especially those characteristic of the Glasgow market, where it is no uncommon occurrence for operators to buy and sell enormous lines of warrants without possessing or desiring to possess a single ton of iron. Much harm has certainly at various periods been inflicted on the British iron trade as an industry by the wild gambling carried on by the iron rings, not alone through the destructive operations of bears but also through the injudicious proceedings of sanguine bulls (a). The influence of this species of speculation distorts prices and, of course, costs, and it has much to do with the irregularities noticed in the quotations of steel rails. This feature will be referred to again when discussing the cost of production of steel rails. The cost of production is also affected by the freight charges on the assemblage of raw materials like ore, coal, coke, etc. The cost of transporting ore, for instance, will vary as between two establishments located side by side and bringing their ore from the same mine. One establishment may have influence with the road by which rebates are obtained, while the other establishment, having no such influence, is obliged to pay the full official rates. While such conditions are not frequent, nevertheless in some cases they are disturbing elements in the attempt to arrive at exact cost of producing pig iron or steel.

FREIGHTS.

The cost of freight from the place of production to the point of free delivery or of sale has much to do, of course, with the iron trade as with all others. The Department, therefore, has taken pains to collect official data showing the freight rates from great points of production to points and ports of shipment, but as these freight rates relate to all kinds of iron and steel, the tables showing them are printed at the close of the analysis of the general tables, Part I, instead of being distributed under various specific products.

a The Economist, London, November 20, 1890.

DISTRICTS.

As a further means of preventing the identification of establishments as promised to manufacturers, the names of localities and even of states are omitted. For pig iron the United States is divided into two districts and Europe into two, and the facts tabulated by such districts. The actual and relative volume of production of pig iron in the different sections of this country, as reported at the eleventh census, may be seen from the following table:

PRODUCTION OF PIG IRON IN THE UNITED STATES AT THE ELEVENTH CENSUS.

Districts.	Tons of 2,000 pounds—year ending—		
	May 31, 1870.	May 31, 1880.	June 30, 1890.
New England states	34, 471	30, 957	33, 781
Middle states	1, 311, 649	2, 401, 003	5, 216, 591
Southern states	134, 540	350, 438	1, 780, 909
Western states	522, 161	965, 335	2, 522, 351
Far western states .....	.....	3, 200	28, 147
Total	2, 052, 821	3, 781, 021	9, 579, 779

From the foregoing statement it will be seen that the middle and western states, practically extending in one general system from east to west, are properly classed as the northern district, and are the great producers of pig iron, while the southern states, forming a division of the country by themselves and working under their own conditions, properly constitute the southern district. The northern district includes the states of Illinois, Indiana, Maryland, Michigan, Missouri, New York, Ohio, Pennsylvania, West Virginia, and Wisconsin, and work under what may be called the Pennsylvania system. The southern district, working on what might be denominated the Alabama system of producing iron, includes the states of Alabama, Georgia, Tennessee, and Virginia. Europe has been divided into two districts, the continent of Europe, which for the purposes of this report comprises Germany, Belgium, France, Italy, and Spain, and Great Britain, under which division we have facts for England, Scotland, and Wales. For products other than pig iron the division into districts in the United States is omitted, although continued for Europe.

THE VOLUME OF PRODUCTION OF PIG IRON, STEEL, ETC.

Many persons using this report on the cost of production of iron and steel, and the materials of which iron is made, will not have at hand the statistics of the annual volume of production of such materials. To meet their needs a series of tables on this subject is presented. These tables, beginning with the following and ending on page 25, are taken from reports compiled by Hon. James M. Swank, secretary of the American Iron and Steel Association. The reputation of Mr. Swank is a full guar-

antee of their accuracy. By these tables it will be seen that the United States in 1889 produced over 30 per cent. of the whole output of iron of the world; but the facts for 1890 show that this percentage has been increased, and that now the United States takes first rank among the iron-producing countries, her output being greater than that of any other country.

PRODUCTION OF PIG IRON IN THE UNITED STATES.

Year.	Kind of iron (tons of 2,000 pounds).			
	Anthracite and mixed anthracite and coke.	Charcoal.	Coke and raw bituminous.	Total.
1854	239,425	842,298	54,468	736,219
1855	281,866	329,922	62,390	784,178
1856	443,113	370,470	66,554	880,137
1857	390,385	320,321	77,451	788,157
1858	361,430	285,813	68,331	765,574
1859	471,745	284,041	84,841	840,627
1860	519,211	278,331	122,328	919,770
1861	499,228	195,278	127,037	721,544
1862	470,315	108,690	130,687	709,692
1863	577,438	212,065	157,561	947,064
1864	674,018	241,853	210,125	1,125,996
1865	479,558	262,242	169,682	911,482
1866	748,367	232,590	268,368	1,249,325
1867	798,638	344,341	318,647	1,461,626
1868	893,900	370,000	346,000	1,610,000
1869	971,150	392,150	553,241	1,916,541
1870	920,000	365,000	670,000	1,955,000
1871	956,000	385,000	570,000	1,911,000
1872	1,360,812	500,587	604,150	2,465,549
1873	1,312,754	577,020	677,904	2,567,678
1874	1,302,144	576,567	916,712	2,805,423
1875	906,046	410,990	847,545	2,164,581
1876	794,578	308,649	800,000	1,903,227
1877	834,797	317,643	1,061,945	2,214,385
1878	1,092,970	293,899	1,101,092	2,487,961
1879	1,273,024	358,873	1,438,978	3,070,875
1880	1,807,681	537,536	1,950,205	4,295,422
1881	1,734,482	634,838	2,284,264	4,653,584
1882	2,042,138	607,908	2,438,078	5,128,124
1883	1,883,586	571,726	2,690,650	5,145,972
1884	1,586,453	466,418	2,544,742	4,597,613
1885	1,454,200	389,844	2,675,625	4,519,669
1886	2,000,587	450,597	3,806,174	6,257,358
1887	2,338,389	578,183	4,270,635	7,187,207
1888	1,935,729	598,789	4,743,960	7,278,507
1889	1,830,354	644,200	5,851,425	8,325,979
1890				8,500,250

PRODUCTION OF LEADING PRODUCTS OF IRON AND STEEL IN THE UNITED STATES.

Products.	Tons of 2,000 pounds.					
	1878.	1879.	1880.	1881.	1882.	1883.
Pig iron	2,577,361	2,670,675	4,285,414	4,641,664	6,174,122	5,146,972
By regains, included above	10,674	12,921	19,603	21,006	21,063	24,574
All rolled iron	1,565,676	2,047,484	2,332,688	2,643,937	2,493,831	2,348,974
Rolls of iron, excluding rails	1,232,698	1,627,324	1,828,906	2,153,348	2,265,997	2,230,929
Keels of cut nails and spikes	4,396,120	8,011,081	5,270,512	5,791,296	6,147,097	7,762,727
Bessemer steel rails	550,398	683,964	854,460	1,236,362	1,434,155	1,258,564
Open-hearth steel rails	8,397	9,149	13,615	25,217	22,765	3,196
Iron rails	323,980	429,160	493,763	489,581	227,874	64,854
Rails of all kinds	872,685	1,113,273	1,461,637	1,844,100	1,688,794	1,360,094
Crucible steel ingots	62,908	56,769	72,424	58,763	65,089	50,453
Open hearth steel ingots	36,126	36,206	112,969	148,946	160,512	133,672
Bessemer steel ingots	732,727	929,973	1,268,173	1,839,157	1,698,450	1,654,627
Miscellaneous steel	8,546	5,184	8,665	3,047	3,014	5,596
Steel of all kinds	819,814	1,047,506	1,387,015	1,778,913	1,845,065	1,679,259
Blooms from ore and pig iron	50,043	62,353	74,568	84,068	61,293	74,750

NET PRODUCTION OF LEADING PRODUCTS OF IRON AND STEEL, ETC.—Continued.

Products.	Tons of 2,000 pounds.					
	1884.	1885.	1886.	1887.	1888.	1889.
Pig iron	4,539,419	4,539,869	6,365,328	7,187,706	7,268,507	8,516,079
Spiegel-iron, included above	33,893	34,671	47,953	47,596	54,768	53,328
All rolled iron	1,957,307	1,804,536	2,283,622	2,568,500	2,411,654	2,562,385
Rolled iron, excluding rails	1,931,747	1,789,711	2,259,643	2,565,438	2,397,492	2,576,127
Kegs of cut nails and spikes	7,561,278	6,696,815	8,180,872	6,908,870	6,468,591	6,810,759
Bessemer steel rails	1,116,621	1,074,597	1,763,667	2,854,182	1,562,631	1,991,264
Open-hearth steel rails	2,870	4,793	6,255	10,703	6,281	3,346
Iron rails	23,500	16,518	23,679	53,063	14,252	19,256
Rails of all kinds	1,144,451	1,094,315	1,792,601	2,368,367	1,672,145	1,704,868
Crucible steel ingots	58,668	64,511	80,600	84,421	78,713	84,009
Open-hearth steel ingots	181,817	149,881	245,250	360,717	352,038	419,488
Bessemer steel ingots	1,560,595	1,701,763	2,541,493	2,283,357	2,612,500	2,281,829
Miscellaneous steel	6,111	1,098	2,651	6,265	4,124	5,734
Steel of all kinds	1,738,985	1,917,556	2,870,008	2,739,769	2,947,878	2,792,020
Steele from ore and pig iron	57,006	41,700	41,909	43,308	58,875	56,280

a The production of pig iron for the census year 1889 was 9,546,850 tons, and the production of steel of all kinds for the same year, 4,403,928 tons.

PRODUCTION OF ROLLED IRON, NOT INCLUDING ROLLED STEEL, IN THE UNITED STATES.

Year.	Tons of 2,000 pounds.			Year.	Tons of 2,000 pounds.		
	Iron rails.	Other rolled iron.	Total.		Iron rails.	Other rolled iron.	Total.
1884	385,309	638,958	872,327	1877	332,540	1,144,219	1,476,759
1885	356,292	600,048	956,340	1878	322,690	1,232,649	1,555,339
1886	430,778	595,311	1,026,089	1879	420,160	1,027,324	1,447,484
1887	459,558	579,834	1,039,390	1880	463,702	1,038,008	1,501,688
1888	499,489	598,298	1,097,775	1881	498,581	1,155,346	1,653,927
1889	582,936	642,420	1,225,356	1882	527,874	1,265,057	1,792,931
1870	590,000	705,000	1,295,000	1883	64,954	2,283,920	2,348,874
1871	737,483	710,000	1,447,483	1884	23,560	1,931,747	1,955,307
1872	905,930	841,993	1,747,923	1885	14,815	1,789,711	1,804,526
1873	761,062	1,076,368	1,837,430	1886	23,879	2,259,843	2,283,688
1874	584,469	1,116,147	1,699,616	1887	23,063	2,565,438	2,588,500
1875	501,849	1,097,867	1,599,716	1888	16,262	2,397,492	2,413,754
1876	467,168	1,042,161	1,509,329	1889	10,258	2,376,127	2,386,385

PRODUCTION OF ALL KINDS OF STEEL IN THE UNITED STATES.

Years.	Tons of 2,000 pounds.				
	Bessemer steel ingots.	Open-hearth steel ingots.	Crucible steel ingots.	All other steel.	Total.
1889	8,500	.....	a 21,500	.....	30,000
1890	12,000	1,800	a 22,000	.....	35,800
1879	42,000	1,800	a 23,500	.....	71,000
1871	45,000	2,000	a 25,000	.....	82,000
1872	198,198	3,000	29,290	7,749	160,104
1873	170,852	3,500	34,768	13,714	222,832
1874	191,998	7,000	26,328	5,333	241,614
1875	375,617	9,060	39,491	12,607	436,575
1876	525,998	21,498	29,283	10,306	507,174
1877	500,587	25,081	40,490	11,924	637,972
1878	732,226	36,126	42,908	8,558	819,814
1879	928,672	56,290	56,780	6,484	1,047,506
1880	1,203,173	113,953	72,424	8,465	1,397,015
1881	1,539,137	146,946	80,763	3,047	1,770,913
1882	1,696,450	180,542	85,089	2,014	1,964,095
1883	1,654,627	133,679	80,456	6,596	1,874,358
1884	1,540,595	121,817	50,662	5,111	1,718,185
1885	1,701,769	149,381	84,511	1,696	1,937,357
1886	2,541,493	245,250	80,600	2,651	2,870,008
1887	2,283,357	360,717	84,421	6,265	2,739,769
1888	2,612,500	352,038	78,713	4,124	2,947,375
1889	2,281,829	419,488	84,069	5,734	2,792,020

a Including all other steel.

antee of their accuracy. By these tables it will be seen that the United States in 1889 produced over 30 per cent. of the whole output of iron of the world; but the facts for 1890 show that this percentage has been increased, and that now the United States takes first rank among the iron-producing countries, her output being greater than that of any other country.

PRODUCTION OF PIG IRON IN THE UNITED STATES.

Year.	Kinds of iron (tons of 2,000 pounds).			
	Anthracite and mixed anthracite and coke.	Charcoal.	Coke and raw bituminous.	Total.
1854.....	338,435	842,288	54,488	735,211
1855.....	281,868	329,322	82,390	754,178
1856.....	442,113	379,470	60,554	882,137
1857.....	390,585	330,321	77,451	798,357
1858.....	261,420	286,313	58,331	706,064
1859.....	471,745	284,041	84,841	840,627
1860.....	519,311	278,331	122,328	919,770
1861.....	409,329	196,278	127,037	731,544
1862.....	470,315	186,980	130,667	787,963
1863.....	377,638	212,086	157,361	747,085
1864.....	554,618	241,853	210,125	1,006,596
1865.....	478,558	282,843	189,683	951,084
1866.....	749,367	223,588	268,386	1,241,341
1867.....	788,438	244,341	318,947	1,351,726
1868.....	893,000	270,000	340,000	1,503,000
1869.....	971,150	292,150	363,341	1,626,641
1870.....	930,000	365,000	370,000	1,665,000
1871.....	856,608	385,000	370,000	1,611,608
1872.....	1,300,812	140,587	264,156	2,005,555
1873.....	1,312,754	577,020	277,904	2,167,678
1874.....	1,302,144	578,887	310,712	2,191,743
1875.....	908,048	410,996	347,545	1,666,589
1876.....	784,378	308,649	380,000	1,473,027
1877.....	884,797	317,843	1,081,045	2,283,685
1878.....	1,002,870	293,306	1,191,092	2,487,268
1879.....	1,273,034	368,473	1,438,978	3,080,485
1880.....	1,807,651	637,536	1,850,205	4,295,392
1881.....	1,724,463	634,638	2,264,264	4,623,365
1882.....	2,042,138	697,006	2,423,078	5,162,222
1883.....	1,888,506	571,728	2,669,650	5,129,884
1884.....	1,586,452	458,418	2,544,742	4,589,612
1885.....	1,454,390	369,844	2,875,635	4,699,869
1886.....	2,090,597	450,537	2,806,174	5,347,308
1887.....	2,326,339	578,182	4,270,635	7,175,156
1888.....	1,325,729	608,769	4,743,080	6,677,578
1889.....	1,820,354	644,368	5,851,425	8,316,147
1890.....				9,509,430

PRODUCTION OF LEADING PRODUCTS OF IRON AND STEEL IN THE UNITED STATES.

Products.	Tons of 2,000 pounds.					
	1878.	1879.	1880.	1881.	1882.	1883.
Pig iron.....	2,577,261	3,070,878	4,283,414	4,641,864	5,179,122	5,146,973
Spiegelstein, included above	10,674	13,931	18,603	21,066	21,963	24,574
Roll iron, excluding rails	1,535,878	2,047,494	2,332,008	2,643,927	2,403,831	2,346,874
Keels of cut nails and spikes	1,223,699	1,627,324	1,838,908	2,155,366	2,365,957	2,288,926
Bessemer steel rails	4,398,120	5,011,021	5,270,512	5,791,206	6,147,097	7,782,737
Open hearth steel rails	556,309	668,964	854,480	1,320,302	1,428,156	1,286,554
Iron rails	8,397	9,149	13,615	23,217	22,795	9,186
Rails of all kinds	322,890	420,160	463,763	498,581	237,674	64,934
Crucible steel ingots	627,685	1,113,273	1,461,337	1,844,100	1,888,794	1,360,681
Open hearth steel ingots	42,908	56,790	72,424	88,782	85,089	80,453
Bessemer steel ingots	36,126	56,790	112,053	146,946	160,512	133,679
Miscellaneous steel	532,227	928,973	1,362,178	1,539,157	1,696,430	1,654,627
Steel of all kinds	5,534	5,464	8,465	2,047	2,016	5,568
Blooms from ore and pig iron	619,814	1,017,508	1,397,015	1,772,912	1,945,096	1,674,306
	80,045	62,343	74,589	86,806	81,233	74,756

THE PRODUCTION OF LEADING PRODUCTS OF IRON AND STEEL, ETC.—Continued.

Products.	Tons of 2,000 pounds.					
	1884.	1885.	1886.	1887.	1888.	1889.
Pig iron	4,598,613	4,529,279	4,365,323	7,187,208	7,268,587	8,814,078
Spiegel-iron, included above	33,893	84,671	47,923	47,598	54,769	83,828
All rolled iron	1,897,807	1,804,586	2,253,622	2,588,009	2,411,654	2,686,885
Roller iron, excluding rails	1,831,747	1,789,711	2,239,943	2,568,438	2,397,402	2,578,127
Kings of cut nails and spikes	7,581,579	6,680,515	8,160,973	6,908,879	6,685,591	6,810,758
Bessemer steel rails	1,116,621	1,074,607	1,763,697	2,354,192	1,682,621	1,691,204
Open-hearth steel rails	25,569	24,753	8,255	10,267	5,261	8,846
Iron rails	25,569	24,818	23,679	25,062	16,522	10,238
Rails of all kinds	1,144,451	1,064,215	1,792,901	2,384,397	1,672,144	1,704,688
Crucible steel ingots	59,662	84,511	90,609	84,421	78,713	84,989
Open-hearth steel ingots	121,617	149,581	245,250	260,717	352,036	419,488
Bessemer steel ingots	1,546,595	1,701,762	2,541,493	2,388,357	2,812,500	2,261,629
Miscellaneous steel	5,111	1,405	2,681	6,285	4,124	6,734
Steel of all kinds	1,736,888	1,917,350	2,870,003	2,739,760	3,247,573	2,792,070
Blanks from ore and pig iron	97,006	41,709	41,908	43,208	39,875	38,289

a The production of pig iron for the census year 1890 was 8,569,550 tons, and the production of steel of all kinds for the same year, 4,460,928 tons.

PRODUCTION OF ROLLED IRON, NOT INCLUDING ROLLED STEEL, IN THE UNITED STATES.

Year.	Tons of 2,000 pounds.			Year.	Tons of 2,000 pounds.		
	Iron rails.	Other rolled iron.	Total.		Iron rails.	Other rolled iron.	Total.
1864	335,349	538,958	872,327	1877	332,540	1,144,219	1,476,759
1865	356,293	500,045	856,340	1878	322,890	1,232,486	1,555,376
1866	430,778	505,311	1,026,089	1879	420,160	1,627,324	2,047,484
1867	460,558	579,834	1,039,396	1880	493,762	1,838,906	2,332,668
1868	490,480	598,286	1,088,766	1881	498,581	2,155,346	2,653,927
1869	533,926	642,420	1,226,356	1882	527,874	2,265,957	2,793,831
1870	588,000	705,000	1,293,000	1883	64,954	2,283,920	2,348,874
1871	737,463	710,000	1,447,463	1884	25,569	1,931,747	1,957,317
1872	805,030	841,992	1,647,022	1885	14,815	1,789,711	1,804,526
1873	761,062	1,076,808	1,837,870	1886	32,679	2,259,943	2,292,622
1874	584,469	1,119,147	1,703,616	1887	33,063	2,565,438	2,598,500
1875	501,849	1,097,667	1,599,516	1888	14,252	2,397,402	2,411,654
1876	467,168	1,042,101	1,509,269	1889	10,258	2,376,127	2,386,385

PRODUCTION OF ALL KINDS OF STEEL IN THE UNITED STATES.

Years.	Tons of 2,000 pounds.				
	Bessemer steel ingots.	Open-hearth steel ingots.	Crucible steel ingots.	All other steel.	Total.
1868	8,566		21,500		30,066
1869	12,000	1,000	22,000		35,000
1870	42,000	1,800	33,500		77,300
1871	45,000	2,000	35,000		82,000
1872	120,108	3,000	29,260	7,740	160,108
1873	170,653	3,508	34,768	13,714	222,652
1874	191,923	7,000	36,228	8,353	243,514
1875	375,517	9,060	39,401	12,807	436,785
1876	525,998	21,490	39,382	10,306	597,174
1877	590,567	23,081	40,430	77,924	671,972
1878	732,226	26,128	42,908	8,336	819,614
1879	928,972	65,290	56,780	5,484	1,056,526
1880	1,263,173	112,963	72,424	8,465	1,457,015
1881	1,689,187	148,948	89,763	3,047	1,778,912
1882	1,696,450	160,542	85,089	3,014	1,945,095
1883	1,854,627	123,679	80,456	3,699	1,978,461
1884	1,540,366	121,617	80,662	5,111	1,747,756
1885	1,701,762	149,381	64,511	1,996	1,917,650
1886	2,541,493	245,250	80,609	2,651	2,870,003
1887	2,388,357	260,717	84,421	6,285	2,739,760
1888	2,812,500	352,036	78,713	4,124	3,247,373
1889	2,261,629	419,488	84,989	5,734	2,771,840

a Including all other steel.

antee of their accuracy. By these tables it will be seen that the United States in 1889 produced over 30 per cent. of the whole output of iron of the world; but the facts for 1890 show that this percentage has been increased, and that now the United States takes first rank among the iron-producing countries, her output being greater than that of any other country.

PRODUCTION OF PIG IRON IN THE UNITED STATES.

Year.	Kinds of iron (tons of 2,000 pounds).			
	Anthracite and mixed anthracite and coke.	Charcoal.	Coke and raw bituminous.	Total.
1854.	339,435	343,798	54,485	737,718
1855.	351,966	339,923	62,390	754,279
1856.	448,113	370,470	60,554	879,137
1857.	390,365	330,321	77,451	798,137
1858.	361,430	235,313	66,351	703,094
1859.	471,743	234,941	84,841	791,525
1860.	510,211	278,231	122,228	910,670
1861.	408,229	195,278	127,037	730,544
1862.	470,318	194,600	130,667	795,585
1863.	377,638	313,085	167,961	858,684
1864.	624,018	341,843	219,125	1,185,006
1865.	479,558	282,242	189,567	951,367
1866.	740,867	352,580	269,396	1,362,843
1867.	796,638	344,241	318,647	1,459,526
1868.	682,000	370,000	349,000	1,391,000
1869.	571,180	292,150	353,341	1,216,671
1870.	630,600	345,000	370,000	1,345,600
1871.	556,608	385,000	370,000	1,311,608
1872.	1,306,619	400,687	364,150	2,071,456
1873.	1,312,754	577,030	377,904	2,267,688
1874.	1,352,144	576,557	316,713	2,245,414
1875.	908,048	410,999	347,545	1,666,592
1876.	794,578	308,648	380,000	1,483,226
1877.	664,797	317,643	1,061,945	2,044,385
1878.	1,092,770	283,239	1,191,092	2,567,101
1879.	1,273,034	358,873	1,438,978	3,070,885
1880.	1,607,651	537,556	1,990,205	4,135,412
1881.	1,734,463	638,628	2,269,254	4,642,345
1882.	2,042,138	697,908	2,438,078	5,178,124
1883.	1,885,686	571,726	2,689,650	5,147,062
1884.	1,506,453	458,412	2,544,742	4,509,607
1885.	1,434,390	309,844	2,675,635	4,419,869
1886.	2,090,507	459,537	2,806,174	5,356,218
1887.	2,336,389	578,183	4,270,635	7,185,207
1888.	1,935,728	598,789	4,743,909	7,278,426
1889.	1,920,354	644,360	5,831,423	8,396,137

PRODUCTION OF LEADING PRODUCTS OF IRON AND STEEL IN THE UNITED STATES.

Products.	Tons of 2,000 pounds.					
	1878.	1879.	1880.	1881.	1882.	1883.
Pig iron	2,377,261	2,670,875	4,293,414	4,611,564	5,178,122	5,166,972
Spiegel Eisen, included above	10,674	13,331	19,003	21,096	21,963	24,574
All rolled iron	1,555,576	2,047,484	2,322,868	2,642,927	2,499,931	2,348,374
Rolls of iron, excluding rails	1,223,498	1,627,324	1,838,006	2,135,346	2,265,957	2,280,920
Kilns of cut nails and spikes	4,296,130	3,011,071	5,370,512	5,791,206	6,147,097	7,762,737
Bessemer steel rails	630,208	680,504	954,480	1,330,302	1,438,155	1,280,554
Open-hearth steel rails	9,297	9,149	13,615	25,217	22,765	9,188
Iron rails	322,880	420,160	483,763	689,581	717,674	64,954
Rails of all kinds	642,685	1,112,272	1,461,537	1,414,100	1,688,794	1,300,004
Crucible steel ingots	42,008	50,700	72,434	89,782	88,000	80,453
Open-hearth steel ingots	36,759	50,296	112,053	146,948	160,512	133,679
Bessemer steel ingots	732,221	920,972	1,262,173	1,520,157	1,806,450	1,634,927
Miscellaneous steel	8,340	5,464	8,465	8,047	3,014	5,506
Steel of all kinds	810,814	1,047,596	1,387,015	1,778,912	1,945,965	1,674,260
Blooms from ore and pig iron	60,045	64,343	74,589	84,608	91,293	74,756

THE PRODUCTION OF LEADING PRODUCTS OF IRON AND STEEL, ETC.—Continued.

Products.	Tons of 2,000 pounds.					
	1884.	1885.	1886.	1887.	1888.	1889.
Pig iron	4,588,613	4,529,819	4,365,328	7,187,208	7,269,507	a 8,514,073
Spiegel Eisen, included above	33,893	84,671	47,962	47,698	54,769	83,828
All rolled iron	1,907,207	1,864,586	2,283,622	2,638,008	2,411,654	2,586,885
Rolls of iron, excluding rails	1,231,747	1,780,711	2,259,043	2,565,438	2,307,402	2,574,127
Nails of cut nails and spikes	7,581,379	6,666,815	8,180,973	6,808,870	6,493,591	6,810,753
Bessemer steel rails	1,118,621	1,076,007	1,763,607	2,354,132	1,562,621	1,691,204
Open-hearth steel rails	2,970	4,783	8,255	10,203	8,261	8,246
Iron rails	23,500	14,815	23,679	23,062	16,242	10,250
Rails of all kinds	1,146,551	1,094,215	1,792,601	2,398,397	1,672,144	1,704,869
Crucible steel ingots	59,662	64,511	80,650	84,421	78,713	84,869
Open-hearth steel ingots	131,617	140,381	245,250	360,717	352,038	419,488
Bessemer steel ingots	1,540,595	1,701,763	2,541,493	2,282,357	2,612,500	2,281,629
Miscellaneous steel	8,111	1,696	6,651	6,295	4,124	5,734
Steel of all kinds	1,786,985	1,917,450	2,870,003	3,739,780	3,247,373	a 2,792,020
Stems from ore and pig iron	87,066	41,700	41,909	43,306	39,875	36,230

a The production of pig iron for the census year 1889 was 9,560,850 tons, and the production of steel of all kinds for the same year, 4,464,928 tons.

PRODUCTION OF ROLLED IRON, NOT INCLUDING ROLLED STEEL, IN THE UNITED STATES.

Year.	Tons of 2,000 pounds.			Year.	Tons of 2,000 pounds.		
	Iron rails.	Other rolled iron.	Total.		Iron rails.	Other rolled iron.	Total.
1884	325,369	536,956	872,327	1877	332,540	1,144,219	1,476,759
1885	354,292	600,048	954,340	1878	322,890	1,232,646	1,555,536
1886	430,778	595,311	1,026,089	1879	420,180	1,627,324	2,047,504
1887	460,558	579,834	1,040,396	1880	403,762	1,838,006	2,241,768
1888	490,489	598,288	1,088,777	1881	468,561	2,155,346	2,623,907
1889	528,936	642,420	1,171,356	1882	327,874	2,265,057	2,592,931
1870	598,000	705,000	1,303,000	1883	64,954	2,283,920	2,348,874
1871	737,463	710,000	1,447,463	1884	25,560	1,831,747	1,857,307
1872	905,920	841,992	1,747,912	1885	14,815	1,780,711	1,795,526
1873	761,062	1,076,868	1,837,930	1886	23,679	2,259,043	2,282,722
1874	584,469	1,110,147	1,694,616	1887	23,062	2,565,438	2,588,500
1875	501,649	1,097,867	1,599,516	1888	14,253	2,397,472	2,411,725
1876	467,168	1,042,101	1,509,269	1889	10,258	2,578,127	2,588,385

PRODUCTION OF ALL KINDS OF STEEL IN THE UNITED STATES.

Years.	Tons of 2,000 pounds.				
	Bessemer steel ingots.	Open-hearth steel ingots.	Crucible steel ingots.	All other steel.	Total.
1886	8,500	.....	a 21,500	.....	30,000
1889	12,000	1,000	a 25,000	.....	38,000
1870	42,000	1,800	a 23,500	.....	77,000
1871	45,000	2,000	a 25,000	.....	82,000
1872	130,108	8,000	29,260	7,740	160,108
1873	170,653	3,508	34,786	13,714	222,653
1874	191,939	7,000	36,228	8,353	243,114
1875	375,517	9,060	39,401	12,607	436,575
1876	535,996	21,490	39,382	10,306	597,174
1877	590,587	25,031	40,430	11,924	677,972
1878	732,226	30,128	42,806	8,556	813,716
1879	828,973	68,290	50,780	8,484	956,527
1880	1,203,173	112,963	72,424	8,465	1,397,015
1881	1,590,167	148,948	69,783	3,047	1,712,912
1882	1,696,450	160,542	85,989	3,014	1,945,995
1883	1,654,627	133,679	80,455	8,886	1,877,647
1884	1,540,566	131,617	50,662	5,111	1,728,955
1885	1,701,763	140,381	64,511	1,696	1,917,350
1886	2,541,493	245,250	80,650	2,651	2,870,044
1887	2,282,357	360,717	84,421	6,295	2,733,790
1888	2,612,500	352,036	78,713	4,124	3,047,373
1889	2,791,828	419,468	84,900	5,734	3,292,030

a Including all other steel.

In 1803 the production of all kinds of steel in the United States was 9,044 tons; in 1864, 10,369 tons; in 1865, 15,262 tons; in 1866, 18,973 tons; and in 1867, 22,000 tons, including 3,000 tons of Bessemer steel ingots. Bessemer steel was first made in the United States in the fall of 1864. The manufacture of open-hearth steel in the United States was commenced in December, 1863.

PRODUCTION OF BLOOMS AND BILLETS.

[The production in the United States of wrought iron from ore in forges is now almost entirely confined to the Lake Champlain district of New York. Blooms from pig and scrap iron are made chiefly in Pennsylvania.]

Year.	Tons of 2,000 pounds.				Year.	Tons of 2,000 pounds.			
	Ore blooms and billets made in New York.	Total make of ore blooms and billets.	Pig and scrap blooms made in Pennsylvania.	Total make of pig and scrap blooms.		Ore blooms and billets made in New York.	Total make of ore blooms and billets.	Pig and scrap blooms made in Pennsylvania.	Total make of pig and scrap blooms.
1875	22,666	24,416	10,032	24,827	1883	81,247	23,237	25,190	36,531
1876	20,202	20,764	13,461	22,844	1884	87,745	23,789	19,992	27,216
1877	22,466	24,237	10,517	23,073	1885	18,981	19,867	15,462	31,513
1878	22,839	24,129	16,121	25,906	1886	15,807	18,578	20,636	30,631
1879	27,290	30,283	23,956	31,071	1887	13,643	15,088	21,882	28,218
1880	24,351	40,662	24,319	33,937	1888	14,050	14,088	19,061	25,787
1881	20,893	45,309	28,343	30,227	1889	13,397	12,407	18,564	22,833
1882	42,911	48,354	20,468	43,538					

The production of both products from 1865 to 1880 has been as follows:

Year.	Tons of 2,000 pounds.	Year.	Tons of 2,000 pounds.	Year.	Tons of 2,000 pounds.
1865	68,977	1874	61,879	1883	74,758
1866	73,546	1875	49,249	1884	87,605
1867	73,073	1876	44,028	1885	41,709
1868	76,200	1877	47,360	1886	41,609
1869	69,500	1878	50,045	1887	43,396
1870	62,250	1879	62,353	1888	39,575
1871	63,000	1880	74,539	1889	26,230
1872	64,000	1881	84,606		
1873	62,564	1882	91,283		

THE PRODUCTION OF STEEL IN THE UNITED STATES AND GREAT BRITAIN.

[The production of Bessemer steel ingots (including Clapp-Griffiths steel ingots) and rails in Great Britain in the last thirteen years, compared with the production of the United States during the same period, was as follows. In the ingot tonnage for the United States for 1889 is also included the small quantity of Robert-Bessemer steel made in that year.]

Year.	United States (tons of 2,240 pounds).		Great Britain (tons of 2,240 pounds).	
	Ingots.	Rails.	Ingots.	Rails.
1877	500,524	285,865	750,008	508,400
1878	653,773	481,427	807,627	622,369
1879	829,436	610,682	934,511	829,231
1880	1,074,363	852,196	1,044,262	732,819
1881	1,374,247	1,187,770	1,441,719	1,023,749
1882	1,814,687	1,394,067	1,672,649	1,335,786
1883	1,477,345	1,148,709	1,553,361	1,097,174
1884	1,276,531	904,903	1,296,678	784,808
1885	1,519,430	959,471	1,304,127	799,583
1886	2,269,190	1,574,708	1,570,520	799,343
1887	2,839,623	2,101,904	2,068,403	1,021,847
1888	2,511,161	1,896,277	2,032,794	979,053
1889	2,690,204	1,510,057	2,146,798	943,648

The United States has for many years made more Bessemer steel ingots and Bessemer steel rails than Great Britain. If we consider all the kinds of steel which are made by the two great steel-making countries above mentioned, the United States was also ahead of its European rival in 1886 and 1887. In 1888 and 1889, however, Great Britain again asserted its supremacy. She now excels as a steel producer, because of her large annual production of open-hearth steel.

PRODUCTION AND PRICES OF BESSEMER STEEL RAILS IN THE UNITED STATES.

[The following table shows the annual production in gross tons of Bessemer steel rails in the United States since the beginning of their manufacture in commercial quantities in 1867, together with the average annual price at which they have been sold at works in Pennsylvania.]

Year.	Production (tons of 2,240 pounds).	Price in currency.	Average price of gold.	Year.	Production (tons of 2,240 pounds).	Price in currency.	Average price of gold.
1867.....	2, 277	\$166. 00	138	1879.....	610, 682	\$48. 25	100
1868.....	6, 451	158. 50	140	1880.....	852, 106	67. 50	100
1869.....	8, 616	132. 25	136	1881.....	1, 187, 770	61. 13	100
1870.....	30, 357	106. 75	115	1882.....	1, 284, 067	48. 50	100
1871.....	34, 153	102. 50	112	1883.....	1, 148, 709	37. 75	100
1872.....	83, 991	112. 00	112	1884.....	906, 983	30. 75	100
1873.....	115, 192	120. 50	113	1885.....	959, 471	28. 50	100
1874.....	129, 414	94. 25	112	1886.....	1, 574, 703	34. 50	100
1875.....	259, 099	68. 75	114	1887.....	2, 101, 904	37. 08	100
1876.....	368, 200	59. 25	110	1888.....	1, 386, 277	29. 83	100
1877.....	385, 866	45. 50	105	1889.....	1, 510, 067	29. 25	100
1878.....	491, 427	42. 25	102				

The lowest average annual price at which Bessemer steel rails have been sold in this country was reached in 1885, namely, \$28.50, but sales were made at still lower figures in 1884, 1885, 1888, and 1889, as low as \$26 and \$27.

PRODUCTION AND PRICES OF IRON RAILS IN THE UNITED STATES.

[In the following table is given the production in tons of 2,000 pounds, and prices per ton of 2,240 pounds of standard sections of iron rails in the United States.]

Year.	Tons (2,000 pounds).	Average price per ton of 2,240 pounds.	Year.	Tons (2,000 pounds).	Average price per ton of 2,240 pounds.	Year.	Tons (2,000 pounds).	Average price per ton of 2,240 pounds.
1849.....	24, 318	\$53. 88	1863.....	275, 768	\$76. 88	1877.....	332, 540	\$35. 25
1850.....	44, 083	47. 88	1864.....	335, 369	126. 00	1878.....	322, 800	23. 75
1851.....	50, 003	45. 63	1865.....	356, 292	99. 63	1879.....	420, 160	41. 25
1852.....	62, 478	48. 38	1866.....	430, 778	86. 75	1880.....	493, 762	49. 25
1853.....	87, 864	77. 25	1867.....	450, 538	83. 13	1881.....	468, 581	47. 13
1854.....	108, 016	80. 13	1868.....	499, 489	78. 88	1882.....	227, 874	45. 50
1855.....	128, 674	62. 88	1869.....	583, 936	77. 25	1883.....	64, 954	(a)
1856.....	180, 018	64. 38	1870.....	586, 000	72. 25	1884.....	25, 560	.....
1857.....	161, 918	64. 25	1871.....	727, 483	70. 38	1885.....	14, 815	.....
1858.....	163, 712	50. 00	1872.....	905, 930	85. 13	1886.....	23, 679	.....
1859.....	195, 454	49. 38	1873.....	761, 062	76. 67	1887.....	23, 062	.....
1860.....	205, 038	48. 00	1874.....	584, 469	58. 75	1888.....	14, 252	.....
1861.....	139, 818	42. 38	1875.....	501, 649	47. 75	1889.....	10, 258	.....
1862.....	212, 912	41. 75	1876.....	467, 168	41. 25			

a Since the beginning of 1883 the manufacture of iron rails in the United States has been almost entirely superseded by the manufacture of steel rails. Such iron rails as have since been made in this country have been chiefly street rails and light rails for mines and tramways, the price of which, if added to the above table, would be misleading. As there has been virtually no demand for standard sections of iron rails since 1882, there have been no market quotations for them since that year.

REPORT OF THE COMMISSIONER OF LABOR.

PRODUCTION OF ALL KINDS OF RAILS IN THE UNITED STATES.

[The production of all kinds of rails in the United States since 1869 has been as follows. Prior to 1867 all rails in this country were made of iron.]

Year.	Tons of 2,000 pounds.				
	Beam- steel rails.	Open- hearth steel rails.	Total steel rails.	Iron rails, all kinds.	Total iron and steel.
1869				24, 318	
1870				44, 063	
1871				50, 803	
1872				62, 478	
1873				87, 984	
1874				108, 016	
1875				128, 674	
1876				188, 018	
1877				161, 918	
1878				163, 712	
1879				185, 454	
1880				205, 038	
1881				189, 814	
1882				218, 312	
1883				275, 768	
1884				333, 369	
1885				255, 232	
1886				430, 778	
1887	1, 550		1, 550	450, 588	452, 138
1888	7, 225		7, 225	499, 489	506, 714
1889	8, 850		8, 850	583, 535	592, 385
1890	34, 080		34, 080	586, 090	620, 608
1891	38, 256		38, 256	737, 453	775, 733
1892	84, 078		84, 078	805, 539	1, 000, 090
1893	128, 015		128, 015	761, 063	889, 077
1894	144, 944		144, 944	584, 498	729, 413
1895	290, 853		290, 853	501, 645	792, 512
1896	412, 461		412, 461	467, 188	879, 629
1897	432, 169		432, 169	332, 549	764, 709
1898	550, 399	8, 397	558, 796	322, 890	881, 685
1899	893, 954	8, 169	902, 123	430, 160	1, 332, 273
1900	984, 400	13, 615	998, 015	493, 782	1, 491, 797
1901	1, 330, 302	25, 217	1, 355, 519	489, 581	1, 844, 100
1902	1, 438, 158	22, 708	1, 460, 826	297, 874	1, 758, 704
1903	1, 288, 554	9, 188	1, 297, 742	66, 854	1, 364, 594
1904	1, 116, 631	2, 070	1, 118, 701	39, 569	1, 158, 251
1905	1, 074, 007	4, 793	1, 078, 800	16, 815	1, 095, 615
1906	1, 763, 097	6, 254	1, 769, 351	23, 679	1, 793, 030
1907	2, 354, 123	19, 208	2, 373, 331	23, 082	2, 396, 397
1908	1, 652, 631	5, 261	1, 657, 892	14, 232	1, 672, 144
1909	1, 091, 264	3, 344	1, 094, 608	19, 238	1, 113, 846

CONSUMPTION OF ALL KINDS OF RAILS IN THE UNITED STATES.

Year.	Tons of 2,000 pounds.			
	Made in United States.	Imported.		Approximate consumption.
		Iron.	Steel.	
1867	452, 108	213, 649		626, 157
1868	505, 714	256, 081		761, 795
1869	583, 586	313, 163		896, 749
1870	620, 000	399, 138		1, 019, 138
1871	775, 723	666, 302		1, 341, 983
1872	1, 000, 000	851, 084	148, 789	1, 580, 859
1873	880, 877	99, 201	159, 871	1, 140, 949
1874	729, 413	7, 798	100, 813	837, 924
1875	792, 512	1, 174	15, 274	811, 960
1876	879, 629	287	None.	879, 916
1877	764, 709	None.	35	764, 744
1878	881, 685	None.	10	881, 695
1879	1, 113, 273	19, 090	25, 067	1, 157, 420
1880	1, 491, 797	383, 496	158, 230	1, 933, 523
1881	1, 844, 100	387, 615	240, 368	2, 230, 421
1882	1, 758, 704	61, 693	132, 135	1, 912, 521
1883	1, 364, 594	757	39, 220	1, 365, 571
1884	1, 158, 251	94	3, 074	1, 161, 319
1885	1, 095, 615	87	2, 296	1, 097, 998
1886	1, 793, 030	7	48, 571	1, 841, 608
1887	2, 396, 397	370	134, 099	2, 530, 766
1888	1, 672, 144	34	79, 673	1, 751, 851
1889	1, 794, 846	18	9, 846	1, 804, 710

* Including steel.

CONSUMPTION OF PIG IRON AND OF IRON AND STEEL RAILS.

[In the following table we give the approximate consumption in the United States of pig iron and of iron and steel rails in the last thirty-five years. The production in calendar years is added to the importations in fiscal years, the result being the yearly consumption in calendar years as nearly as can be ascertained. The figures given have been compiled from the records of the American Iron and Steel Association and from the reports of the bureau of statistics of the treasury department.]

Calendar year ending Dec. 31.	Production (tons of 2,240 pounds).		Fiscal year ending June 30.	Imports (tons of 2,240 pounds).		Year.	Consumption (tons of 2,240 pounds).	
	Pig iron.	Iron and steel rails.		Pig iron.	Iron and steel rails.		Pig iron.	Iron and steel rails.
1856	768,150	132,416	1855	95,925	127,316	1856	768,064	251,202
1857	786,515	140,738	1856	56,612	153,685	1857	847,827	316,225
1858	712,640	144,570	1857	51,794	170,305	1858	784,434	323,675
1859	629,548	146,171	1858	41,986	75,744	1859	671,534	321,916
1860	735,380	174,513	1859	72,517	68,985	1860	823,977	344,478
1861	821,223	128,979	1860	71,498	122,175	1861	692,721	365,245
1862	683,184	169,480	1861	74,026	74,490	1862	737,199	343,970
1863	708,270	190,963	1862	22,247	8,411	1863	725,517	199,604
1864	846,975	244,221	1863	31,097	17,085	1864	677,602	293,269
1865	1,014,252	369,427	1864	102,223	116,714	1865	1,114,505	414,151
1866	881,770	316,118	1865	50,652	77,518	1866	862,422	369,684
1867	1,265,083	324,833	1866	102,382	78,097	1867	1,308,665	462,620
1868	1,505,928	412,566	1867	112,042	94,272	1868	1,417,685	508,868
1869	1,431,250	422,423	1868	112,123	131,097	1869	1,543,293	608,520
1870	1,711,267	529,968	1869	124,975	227,793	1870	1,848,263	767,681
1871	1,685,179	628,671	1870	153,263	276,785	1871	1,918,469	833,326
1872	1,706,793	682,619	1871	174,128	458,655	1872	1,994,991	1,150,974
1873	2,548,718	892,857	1872	247,028	581,536	1873	2,796,541	1,424,393
1874	2,560,963	794,712	1873	215,496	367,829	1874	2,776,456	1,125,341
1875	2,461,265	661,262	1874	92,041	148,918	1875	2,498,203	806,189
1876	3,023,738	707,606	1875	68,748	63,688	1876	2,977,481	748,682
1877	1,686,981	785,382	1876	76,435	4,768	1877	2,948,416	790,684
1878	2,066,594	682,776	1877	67,922	30	1878	2,134,516	687,806
1879	2,301,215	759,112	1878	56,960	11	1879	2,356,215	768,125
1880	2,741,853	993,983	1879	67,676	2,611	1880	2,825,429	896,804
1881	2,635,191	1,305,212	1880	754,697	122,791	1881	4,589,844	1,404,008
1882	4,144,264	1,646,516	1881	417,849	392,294	1882	4,962,103	1,948,812
1883	4,628,323	1,507,851	1882	466,645	295,696	1883	5,119,699	1,803,517
1884	4,595,510	1,214,905	1883	453,092	118,092	1884	5,029,112	1,832,867
1885	4,697,898	1,022,188	1884	252,172	7,971	1885	4,891,040	1,039,159
1886	4,644,626	976,978	1885	151,936	4,293	1886	4,196,485	962,181
1887	5,693,229	1,090,827	1886	281,674	16,697	1887	5,948,082	1,411,644
1888	6,417,148	2,136,649	1887	418,918	77,043	1888	6,236,087	2,216,628
1889	6,489,735	1,463,760	1888	223,617	137,934	1889	6,515,295	1,640,724
1890	7,603,642	1,623,264	1889	176,727	36,277	1890	7,789,999	1,548,684

Mr. H. V. Poor, in an argument presented to the ways and means committee of the house of representatives, at Washington, on February 3, 1880, gave the price of steel rails in British ports in 1863 as 309 shillings, or \$89.79.

IMPORTS OF IRON, STEEL, ETC., INTO THE UNITED STATES.

(Prepared from statistics furnished by the United States bureau of statistics.)

Commodities.	1886.		1887.		1888.		1889.	
	Tons of 2,000 pounds.	Value.	Tons of 2,000 pounds.	Value.	Tons of 2,000 pounds.	Value.	Tons of 2,000 pounds.	Value.
Pig iron.....	405,180	45,454,784	523,025	57,281,834	220,905	52,007,327	150,298	52,982,137
Scrap iron.....	97,635	1,056,387	251,014	4,882,753	50,175	531,385	40,227	447,492
Scrap steel.....	11,353	145,649	29,718	941,079	10,280	113,168	2,510	32,964
Bar iron.....	32,647	1,350,456	40,565	1,400,015	35,554	1,119,107	32,118	1,087,122
Iron rails.....	7	186	270	6,701	24	498	10	229
Steel rails.....	44,571	887,297	154,998	2,982,826	70,578	1,524,982	4,940	163,110
Cotton ties.....	11,561	282,260	24,278	600,464	32,942	827,750	23,313	629,960
Hoop, band, and scroll iron.....	128	2,949	25	985	187	7,642	7	291
Steel hoops, sheets, and plates.....	4,719	224,578	26,685	851,903	26,226	906,218	15,085	782,215
Steel ingots, bars, etc.....	167,357	2,296,707	247,818	6,545,985	116,004	2,622,870	21,646	1,989,627
Sheet, plate, and tag- gers' iron.....	6,322	619,417	8,012	829,019	7,006	906,148	7,576	441,456
Tin plates.....	228,761	17,504,976	317,896	18,690,145	334,026	19,762,961	371,068	21,734,797
Wire rods.....	153,461	2,940,648	167,292	4,328,617	114,020	3,127,878	62,806	2,469,259
Wire and wire rope..	2,059	612,389	2,247	582,648	3,549	579,178	4,571	731,216
Anvils, axes, and forgings.....	963	166,073	1,474	153,134	1,319	170,016	1,668	179,254
Chains.....	689	70,983	1,031	96,801	929	94,947	695	77,418
Cutlery.....	.....	1,322,511	.....	2,060,615	.....	2,226,286	.....	2,262,529
Files, file blanks, rasps, and floats.....	.....	87,478	.....	74,190	.....	62,894	.....	69,157
Firearms.....	.....	936,554	.....	1,053,573	.....	1,050,071	.....	1,223,542
Machinery.....	.....	1,897,883	.....	1,970,543	.....	1,906,839	.....	2,829,622
Needles.....	.....	325,514	.....	331,342	.....	394,000	.....	279,544
Other manufactures of iron and steel.....	.....	1,518,649	.....	1,852,707	.....	1,709,407	.....	1,678,089
Total.....	.....	41,630,779	.....	56,420,907	.....	42,511,689	.....	42,927,742
Iron-ore.....	1,164,165	1,012,437	1,297,617	2,204,958	637,906	1,212,589	954,008	1,062,292

In the production of coal, one of the raw materials in the manufacture of pig iron, the United States is only surpassed by Great Britain, while in the production of iron ore, another raw material, the United States is nearly abreast of its great rival.

The following table shows our production of these important products in 1889 in comparison with their production by other countries in that year or in the most recent years for which official statistics or data for a careful estimate are available. English tons of 2,240 pounds are used in giving the statistics of Great Britain and the United States, and metric tons of 2,204 pounds are used for all the continental countries of Europe:

THE WORLD'S PRODUCTION OF IRON ORE AND COAL.

Countries.	Iron ore.		Coal.	
	Year.	Tons.	Year.	Tons.
Great Britain.....	1889.....	14,589,713	1888.....	169,935,210
United States.....	1889.....	14,096,427	1888.....	122,674,771
Germany and Luxemburg.....	1888.....	10,684,800	1888.....	81,960,000
France.....	1889.....	2,500,000	1889.....	24,388,880
Belgium.....	1889.....	213,000	1889.....	19,810,000
Austria and Hungary.....	1889.....	2,200,000	1889.....	24,080,000
Russia.....	1897.....	1,324,899	1887.....	4,484,174
Sweden.....	1888.....	908,540	1889.....	300,000
Spain.....	1889.....	4,500,000	1889.....	1,000,000
Italy.....	1897.....	220,875	1887.....	227,985
Other countries.....	1889.....	2,000,000	1889.....	12,000,000
Total.....	.....	36,198,754	.....	462,000,709
Percentage of the United States.....	.....	28.4	.....	26.7

The following table gives the world's production of pig iron and steel in the most recent years for which statistics are available, but chiefly for 1889. English tons of 2,240 pounds are used in giving the statistics of Great Britain and the United States, and metric tons of 2,204 pounds for all the continental countries of Europe. As in the case of iron ore and coal, the United States is only surpassed by Great Britain in the production of pig iron and steel. (a)

THE WORLD'S PRODUCTION OF PIG IRON AND STEEL.

Countries.	Pig iron.		Steel.	
	Year.	Tons.	Year.	Tons.
Great Britain.....	1889.....	8,245,336	1889.....	3,000,902
United States	1889.....	7,003,842	1889.....	2,306,732
Germany and Luxemburg	1889.....	4,387,504	1888.....	1,002,000
France.....	1889.....	1,722,480	1889.....	529,021
Belgium.....	1889.....	847,000	1889.....	248,000
Austria and Hungary.....	1889.....	761,000	1888.....	355,038
Russia.....	1887.....	532,849	1887.....	222,025
Sweden.....	1889.....	457,052	1888.....	114,537
Spain.....	1889.....	200,000	1887.....	24,500
Italy.....	1887.....	12,265	1887.....	73,203
Other countries.....	1889.....	100,000	1889.....	30,000
Total .....	.....	24,893,534	.....	10,512,977
Percentage of the United States .....	.....	30	.....	32

It will be seen that in 1889 the United States produced 30 per cent. of the world's production of pig iron and 32 per cent. of its production of all kinds of steel.

The statistics of the production of pig iron and steel which have been given in the above table show that there are now three great iron and steel producing countries, namely Great Britain, the United States, and Germany, whereas only twenty-five years ago Great Britain was so far ahead of all other countries in the manufacture of these products that her manufacturers and statesmen did not dream that she would ever have serious competitors in the world's markets. The iron and steel consuming countries of the world were supposed to be dependent upon her for Welsh rails for their railroads, the finer qualities of Scotch pig iron for foundry purposes, Low Moor and other favorite brands of plate iron for boilers, Crown and other choice brands of bar iron from Staffordshire, English-drawn wire, English hoops and cotton ties, Sheffield cutlery and edge tools, and all kinds of iron and steel machinery in the manufacture of which great skill is required. At that time the Bessemer steel industry had not been established in the United States and its possibilities were not understood even in England where it originated, and we had but just commenced to develop our rich stores of Lake Superior iron ores and to apply our excellent Connellsville coke to their reduction. Germany lagged far behind as a producer of pig iron and steel and all their products.

The basic process of manufacturing steel from highly phosphoriferous ores, with which Germany is abundantly supplied, had not then been invented. But Great Britain was busy making steel by various new and old processes; she had an abundant supply of cheap coal; she had

a Since the foregoing table was prepared the United States has taken the first place in the production of iron.

long known the virtues of Durham and other coke; and she had a variety of iron ores in abundance everywhere.

Since those days the United States and Germany have rapidly and even phenomenally increased their production of pig iron and steel, and of all articles made from them. The whole world, indeed, has greatly increased its production of iron and steel in the last twenty-five years, a result which is largely due to the extraordinary development in that period of railroad enterprises in all civilized countries, and to the invention of the Bessemer process which has made cheap steel rails and cheap transportation possible; but the United States and Germany have made more progress than any other countries, and very much more relatively than Great Britain.

The following table shows the world's production of pig iron and steel in 1878, twelve years ago, complete statistics for an earlier period being inaccessible. Gross tons [of 2,240 pounds] are used for Great Britain and the United States, and metric tons [of 2,204 pounds] for all other countries:

THE WORLD'S PRODUCTION OF PIG IRON AND STEEL IN 1878.

Countries.	Tons.	
	Pig iron.	Steel.
Great Britain	6,281,051	1,100,000
United States	2,301,215	731,978
Germany and Luxemburg	2,147,641	570,328
France	1,417,072	281,800
Belgium	493,544	98,099
Austria and Hungary	434,250	124,478
Russia	409,633	66,598
Sweden	333,496	25,918
Spain	60,000	250
Italy	20,000	3,000
Other countries	120,000	16,750
Total	14,117,902	3,021,093

By comparing this table with the preceding table for 1889 it will be seen that the world's production of pig iron increased from 14,117,902 tons in 1878 to 24,869,534 tons in 1889, or 76 per cent., while the world's production of steel increased in the same period from 3,021,093 tons to 10,513,977 tons, or 248 per cent. This is wonderful progress. The figures we give are most significant, however, in showing how rapidly the use of steel has grown in favor, notwithstanding the increased use of manufactured iron. The cheapness with which steel can now be produced has greatly stimulated the production of pig iron suitable for its manufacture.

The following tables exhibit in percentages the relative position of Great Britain, the United States, Germany, and all other iron and steel producing countries in 1878 and 1889. Gross and metric tons are used as heretofore explained. The small pig iron production of Luxemburg is necessarily included with that of Germany.

THE WORLD'S PRODUCTION OF PIG IRON IN 1878 AND 1888.

Countries.	Tons.		Per cent.	
	1878.	1888.	1878.	1888.
Great Britain.....	4,281,081	3,345,326	45.20	33.16
United States.....	2,391,215	7,603,441	16.30	30.67
Germany and Luxemburg.....	2,147,641	4,387,504	15.71	17.64
France.....	1,417,072	1,722,480	10.04	6.82
Belgium.....	488,544	847,000	2.60	2.51
Austria and Hungary.....	434,250	761,406	5.33	3.00
Russia.....	400,438	832,648	2.00	2.14
Sweden.....	323,400	457,062	2.36	1.84
Spain.....	60,000	200,000	.43	.80
Italy.....	20,000	12,285	.14	.06
Other countries.....	120,000	100,000	.86	.40
Total.....	14,117,802	34,808,534	100.00	100.00

This table shows that Great Britain's production of pig iron has decreased in the last eleven years from 45.20 to 33.16 per cent. of the total product, while that of the United States has increased from 16.30 to 30.67 per cent., and that of Germany from 15.71 to 17.64 per cent.

THE WORLD'S PRODUCTION OF STEEL IN 1878 AND 1888.

Countries.	Tons.		Per cent.	
	1878.	1888.	1878.	1888.
Great Britain.....	1,100,000	2,500,000	20.41	34.90
United States.....	751,976	2,525,732	24.22	32.30
Germany.....	670,233	1,000,000	15.00	17.71
France.....	251,000	530,000	5.23	5.03
Belgium.....	50,000	240,000	1.14	2.30
Austria and Hungary.....	120,470	360,000	4.20	3.33
Russia.....	60,000	220,000	2.20	2.11
Sweden.....	25,015	114,000	.60	1.00
Spain.....	200	24,000	.01	.20
Italy.....	1,000	72,000	.10	.70
Other countries.....	15,750	20,000	.50	.30
Total.....	2,921,000	10,512,977	100.00	100.00

This table shows that Great Britain has not quite maintained her relative position as a steel producer during the past eleven years; that Germany has maintained her position a little better than Great Britain, and that the United States has made a decided gain in the percentage of her production.

But Great Britain, while fast losing her leadership in the manufacture of iron and steel and sharing it with the United States and Germany, is destined to remain a powerful competitor with all iron and steel producing countries, both in their own and in neutral markets. Although a large importer in late years of iron ores of special qualities, she still mines large quantities of native ores, while the exhaustion of her vast supplies of coal is only a remote possibility. The foreign ores which she imports, chiefly from Spanish mines, are easily obtained.



PART I.

COST OF PRODUCTION:

PIG IRON.	STEEL INGOTS.	BITUMINOUS COAL.
MUCK BAR IRON.	STEEL RAILS.	COKE.
FINISHED BAR IRON.	MISCELLANEOUS STEEL.	IRON ORE.
MISCELLANEOUS IRON.		LIMESTONE.

COST OF PRODUCTION.

GENERAL TABLES.

The general tables relating to the cost of production, which constitute the bases of the analyses contained in Part I, are numbered from I to XI, inclusive. They cover 618 establishments, and are, respectively, for the cost of production of pig iron, of muck bar iron, of finished bar iron, of miscellaneous iron products, of steel ingots, of steel rails, of miscellaneous steel products, of bituminous coal, of coke, of iron ore, and of limestone, at various establishments, mines, ovens, and quarries in various states. For each general table there are numerous sub-tables, designated by capital letters. The establishments comprehended by each table are numbered separately; that is to say, the pig iron tables have their own series of numbers, ranging from 1 to 118, inclusive; the muck bar iron establishments have a separate series, running from 1 to 38, inclusive; the finished bar establishments from 1 to 29, inclusive, etc. An establishment number under one industry has no relation to the same number under another industry. It has been difficult, from a statistical point of view, to present the pig iron tables in such a way that all of their features might be easily used. The basis of presentation finally adopted is that of kind of product, all the establishments for one kind of product being presented *seriatim* for the different industries or countries; for instance all the establishments producing gray forge iron are brought together, with all the establishments in one district following each other. Other methods of presentation were carefully considered, but this on the whole seemed to have less objections than any other form. In some respects it might have been more convenient to have brought all the establishments for a specified district together, without regard to the kind of product, but it is evident that this method, while having some advantages, would have created much more confusion than that adopted. By notes accompanying each presentation or table, and through the analysis given following each table, it is felt that their various elements, complicated and analytical in themselves as they are, have been presented in the clearest manner possible under the circumstances. The industries are taken up one at a time, and in the order named, and all the appropriate analytical tables and text discussion belonging to each immediately follow it. Thus, under the first title, Cost of production of pig iron, etc., everything relating to pig iron is taken up. This method is somewhat different from that generally adopted, where great tables are the result of an investigation, in which case they are usually given collectively at the close of the report, the analyses preceding them.

PIG IRON.

PIG IRON.

The first industry taken up in accordance with the plan which has been described in the introduction is pig iron. The tabulations present not only the cost of producing pig iron, but, so far as possible, the circumstances surrounding its production. As has been mentioned, the United States has been divided into two districts, the northern and the southern, and Europe into two, Great Britain and the continent of Europe. Whatever has been found that moderates or heightens, or in any manner changes the full force of the figures given, or whatever in any respect needs explanation, has been stated in the various accompanying notes. The titles of the table and sub-tables are here shown :

TABLE I.—Cost of Production of Pig Iron at Various Establishments in Various States.

- A.—Period covered and quantity of product.
- B.—The appliances of production.
- C.—The assemblage of the materials.
- D.—Chemical analysis of ore.
- E.—Quantity and cost of materials charged into the furnace.
- F.—Proportions of materials charged into the furnace.
- G.—General statement of cost for the period.
- H.—Elements of cost in one ton of 2,240 pounds.
- J.—Per cent. of each element of cost in one ton of 2,240 pounds.
- K.—Additional cost of certain theoretical elements.
- L.—Additional cost of certain theoretical elements in one ton of 2,240 pounds.

The days of running time, reported in Table I.—A, are days of two turns (or in a very few cases of three turns) each, or practically days of 24 hours, as the operations of a blast furnace except in accidental cases of stoppage are practically continuous.

In the column of description is shown the kind or grade of pig iron produced. The grading has been done as fully as it was possible to do in a tabular statement. The term run of furnace is used to designate the product of a furnace which produced several grades of pig iron in considerable quantities, and for which no means of separately determining the cost of each grade existed. This division into grades is important, as it furnishes a reason for the differences in the cost of materials in different establishments; for the materials necessary to make Bessemer iron, for example, are of a better grade, and usually cost more than those for forge iron.

production, has an
reason for the difference
preceding table.

of the materials, shows
several materials to the fur-
transported. This table is
should be called to two
per ton for transportation
rate, while in others
having been secured by the
was not usually reported,

reported in Table I.—D, while
costs of the ores, and become
quantities of ore used.
relating to the quantities and
and proportions of materials
with Table I.—D and the
(Table I.—H). It will be
the ore shows a high per-
into the furnace per ton

I.—J) show respectively the
the per cent. of cost in a ton
necessary elements of cost in the
interest, depreciation of value of
product to the place of free
tables as not being essential
with the exception of freight
the supplementary tables (I.—K

I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES.

[The names of the states are omitted to prevent the identification of individual establishments, but the states covered and number of establishments for each are as follows: In the northern district of the United States—Illinois, 3; Indiana, 1; Maryland, 1; Michigan, 2; Missouri, 1; New York, 5; Ohio, 21; Pennsylvania, 24; West Virginia, 4; Wisconsin, 1. In the southern district of the United States—Alabama, 12; Georgia, 1; Tennessee, 9; Virginia, 2. In continental Europe—Belgium, 6; France, 1; Germany, 5. In Great Britain, 5.]

PERIOD COVERED AND QUANTITY OF PRODUCT.

Establishment number.	Locality.	Period covered.		Pig iron produced.			
		Terminal dates.	Days of running time.	Description.	Tons of 2,240 pounds.		Number of furnaces.
					Total.	Per day per furnace.	
1	Northern district, United States.	July 1, 1888, to Dec. 31, 1888	150	Hot blast charcoal ..	2,800	19	1
2	do	Dec. 1, 1888, to Nov. 30, 1888	244	Hot blast charcoal ..	24,945	78	1
3	do	Apr. 15, 1889, to Nov. 15, 1889	196	Hot blast charcoal ..	11,779	60	1
4	do	Jan. 1, 1889, to Dec. 31, 1888	303	Hot blast charcoal ..	13,514	44	1
5	do	Apr. 1, 1889, to Mar. 31, 1890	241	Hot blast charcoal ..	3,000	12	1
6	do	Jan. 1, 1889, to Dec. 31, 1888	248	Cold blast charcoal ..	2,500	10	1
7	do	Jan. 1, 1889, to Dec. 31, 1888	317	Cold blast charcoal ..	1,563	5	1
8	Southern district, U. S.	Jan. 1, 1889, to Dec. 31, 1888	353	Hot blast charcoal ..	14,398	41	1
9	Northern district, U. S.	Jan. 1, 1888, to Dec. 31, 1888	365	Bessemer	518,614	1,400	1
10	do	Jan. 1, 1888, to Dec. 31, 1888	336	Bessemer	51,808	158	1
11	do	Nov. 1, 1888, to Oct. 31, 1888	297	Bessemer	21,074	71	1
12	do	Jan. 7, 1889, to July 1, 1889	171	Bessemer	25,392	148	1
13	do	Jan. 1, 1889, to Dec. 31, 1888	338	Bessemer	24,741	73	1
14	do	Jan. 1, 1889, to Dec. 31, 1888	344	Bessemer	84,429	223	2
15	do	Jan. 1, 1889, to Dec. 31, 1888	288	Bessemer	31,879	114	1
16	do	Jan. 1, 1889, to Dec. 31, 1888	205	Bessemer	72,884	178	2
17	do	Jan. 1, 1889, to Dec. 31, 1888	210	Bessemer (c)	30,000	97	1
18	do	Jan. 1, 1888, to Dec. 31, 1888	216	Bessemer	25,715	119	1
19	do	Aug. 3, 1889, to Feb. 1, 1890	162	Bessemer	25,450	140	1
20	do	Jan. 1, 1888, to Dec. 31, 1888	365	Bessemer	43,800	120	1
21	do	Apr. 1, 1889, to July 1, 1889	91	Bessemer	31,450	238	1
22	do	July 1, 1888, to Dec. 31, 1888	184	Bessemer	22,080	120	1
23	do	Jan. 1, 1889, to Dec. 31, 1888	343	Bessemer	30,292	88	1
24	do	June 1, 1889, to Dec. 31, 1888	214	Bessemer	74,169	112	1
25	do	Jan. 1, 1889, to Dec. 31, 1888	348	Bessemer	27,132	78	1
26	do	Jan. 1, 1889, to Dec. 31, 1888	309	Bessemer	41,474	102	1
27	do	Jan. 1, 1889, to Dec. 31, 1888	333	Bessemer	41,834	68	2
28	do	Jan. 1, 1889, to Dec. 31, 1888	305	Bessemer	43,800	120	1
29	do	Jan. 1, 1889, to Dec. 31, 1888	226	Bessemer	32,845	145	1
30	do	Jan. 1, 1889, to June 30, 1889	180	Bessemer	21,194	118	1
31	do	July 1, 1889, to Dec. 31, 1888	173	Bessemer	20,250	117	1
32	do	Jan. 1, 1889, to Dec. 31, 1888	191	Bessemer	24,647	129	1
33	Continent of Europe.	July 1, 1887, to June 30, 1888	366	Bessemer	107,278	73	4
34	do	Apr. 7, 1889, to May 4, 1889	28	Bessemer	41,508	335	3
35	do	Jan. 1, 1889, to Dec. 31, 1888	365	Bessemer	85,626	117	2
36	Great Britain	Apr. 1, 1888, to Sept. 29, 1888	182	Bessemer	31,714	87	2
37	do	Apr. 1, 1888, to Sept. 29, 1888	182	Bessemer	145,468	969	4
38	do	Dec. 30, 1888, to June 29, 1889	182	Bessemer	24,062	62	3
39	do	Nov. 1, 1888, to Oct. 31, 1888	363	Bessemer	62,922	87	2
40	Continent of Europe.	Mar. 1, 1890, to Mar. 31, 1890	31	Spiegelstein ..	1,067	34	1
41	Northern district, U. S.	July 17, 1888, to Dec. 31, 1888	167	Foundry No. 1	8,296	60	1
42	do	June 1, 1888, to May 31, 1889	365	Foundry No. 1	29,300	81	1

a Establishment also produced during the period 32,617 tons of foundry pig iron.

b Including production of foundry pig iron.

c Guaranteed as having under one-tenth of 1 per cent. of phosphorus.

d Establishment also produced during the period 1,392 tons of foundry pig iron No. 2.

e Including production of foundry pig iron No. 2.

f Establishment also produced during the period 4,843 tons of gray forge pig iron.

g Including production of gray forge pig iron.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT—Continued.

Establishment number.	Locality.	Period covered.		Days of running time.	Description.	Tons of 2,240 pounds.		Number of furnaces.
		Terminal dates.				Total.	Per day per furnace.	
43	Continent of Europe.	(a)		(a)	Foundry No. 1.....	(a)	(a)	(a)
44	do	Apr. 7, 1889, to May 4, 1889	28		Foundry No. 2.....	61,302	235	2
45	do	(a)	(a)		Foundry No. 3.....	(a)	(a)	(a)
46	Northern district, U. S.	Jan. 1, 1889, to Dec. 31, 1889	365		Foundry.....	15,934	44	1
47	do	Nov. 1, 1888, to June 30, 1889	234		Foundry.....	11,467	49	1
48	do	Nov. 1, 1888, to Oct. 31, 1889	313		Foundry.....	23,730	76	1
49	do	Apr. 1, 1889, to Dec. 28, 1889	271		Foundry.....	17,757	66	1
50	do	Jan. 1, 1889, to Dec. 31, 1889	365		Foundry.....	632,417	2140	1
51	do	Jan. 1, 1888, to Dec. 31, 1888	332		Foundry.....	78,867	107	1
52	do	July 1, 1888, to May 4, 1889	230		Gray forge.....	52,494	114	1
53	do	Jan. 1, 1889, to Dec. 31, 1889	365		Gray forge.....	67,100	186	1
54	do	Jan. 1, 1889, to June 30, 1889	181		Gray forge.....	22,431	63	1
55	do	Oct. 21, 1888, to Apr. 21, 1889	180		Gray forge.....	32,060	123	1
56	do	Jan. 1, 1888, to Dec. 31, 1888	163		Gray forge.....	14,214	78	1
57	do	July 25, 1888	1		Gray forge.....	185	185	1
58	do	July 1, 1889, to Sept. 1, 1889	61		Gray forge.....	11,322	181	1
59	do	Jan. 1, 1889, to Dec. 31, 1889	365		Gray forge.....	15,415	42	1
60	Continent of Europe.	Jan. 1, 1889, to Dec. 31, 1889	365		Gray forge.....	67,830	88	2
61	Great Britain	Apr. 1, 1888, to Sept. 29, 1888	182		Gray forge.....	64,843	359	4
62	do	Nov. 1, 1888, to Oct. 31, 1889	365		Gray forge (f).....	211,873	482	1
63	do	Nov. 1, 1888, to Oct. 31, 1889	365		Gray forge (f).....	17,080	482	1
64	Continent of Europe.	Oct. 1, 1889, to Oct. 31, 1889	22		Gray forge.....	1,258	57	1
65	Northern district, U. S.	Sept. 10, 1888, to May 21, 1889	252		Run of furnace.....	8,489	24	1
66	do	July 1, 1888, to June 30, 1889	340		Run of furnace.....	39,985	116	1
67	do	July 1, 1888, to June 30, 1889	304		Run of furnace.....	32,333	107	1
68	do	Oct. 1, 1889, to Dec. 31, 1889	92		Run of furnace.....	11,232	122	1
69	do	July 1, 1889, to Dec. 31, 1889	182		Run of furnace.....	88,413	106	1
70	do	Jan. 1, 1889, to Dec. 31, 1889	365		Run of furnace.....	16,950	44	1
71	do	Jan. 1, 1889, to Dec. 31, 1889	361		Run of furnace.....	50,318	136	1
72	do	Jan. 1, 1888, to Dec. 31, 1888	366		Run of furnace.....	36,470	100	1
73	do	Jan. 1, 1889, to Dec. 31, 1889	350		Run of furnace.....	14,724	43	1
74	do	Jan. 1, 1888, to Dec. 31, 1888	366		Run of furnace.....	32,730	89	1
75	do	Jan. 1, 1888, to Dec. 31, 1888	366		Run of furnace.....	24,343	94	1
76	do	June 1, 1888, to May 31, 1889	327		Run of furnace.....	32,690	91	1
77	do	July 1, 1889, to June 30, 1889	309		Run of furnace.....	26,016	84	1
78	do	July 1, 1889, to July 31, 1889	31		Run of furnace.....	1,051	34	1
79	do	Oct. 1, 1889, to Oct. 31, 1889	30		Run of furnace.....	1,825	54	1
80	do	Dec. 1, 1889, to Dec. 31, 1889	31		Run of furnace.....	2,760	45	1
81	do	July 1, 1889, to June 30, 1889	206		Run of furnace.....	18,214	62	1
82	do	May 1, 1889, to July 31, 1889	92		Run of furnace.....	2,343	25	1
83	do	May 1, 1889, to July 31, 1889	92		Run of furnace.....	2,447	27	1
84	do	Feb. 1, 1889, to May 31, 1889	120		Run of furnace.....	5,877	49	1
85	do	Oct. 1, 1889, to Dec. 31, 1889	92		Run of furnace.....	1,345	15	1
86	do	July 1, 1889, to Dec. 31, 1889	184		Run of furnace.....	17,629	96	1
87	do	Aug. 23, 1889, to Jan. 1, 1890	124		Run of furnace.....	9,182	74	1
88	do	Jan. 1, 1889, to Dec. 31, 1889	366		Run of furnace.....	24,401	60	1
89	do	Jan. 1, 1889, to Dec. 31, 1889	364		Run of furnace.....	37,460	111	1
90	do	Sept. 1, 1889, to Mar. 31, 1890	167		Run of furnace.....	39,873	119	1
91	Southern district, U. S.	Sept. 1, 1888, to Aug. 31, 1889	283		Run of furnace.....	39,928	68	1
92	do	Jan. 1, 1889, to Oct. 13, 1889	286		Run of furnace.....	35,036	61	1
93	do	Oct. 7, 1889, to Dec. 31, 1889	78		Run of furnace.....	6,301	80	1
94	do	Jan. 1, 1889, to Dec. 31, 1889	344		Run of furnace.....	35,156	102	1

a Not reported.

b Establishment also produced during the period 1,508 tons of Bessemer pig iron.

c Including production of Bessemer pig iron.

d Establishment also produced during the period 18,614 tons of Bessemer pig iron.

e Establishment also produced during the period 45,408 tons of Bessemer pig iron.

f Special grade.

g Establishment also produced during the period 7,900 tons of ordinary grade gray forge pig iron.

h Including production of ordinary grade gray forge pig iron.

i Ordinary grade.

j Establishment also produced during the period 21,675 tons of special grade gray forge pig iron.

k Including production of special grade gray forge pig iron.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT—Concluded.

Estab- lish- ment num- ber.	Locality.	Period covered.		Pig iron produced.			Number of fur- naces.
		Terminal dates.	Days of run- ning time.	Description.	Tons of 2,240 pounds.		
					Total.	Per day per fur- nace.	
85	Southern dis- trict, U. S.	July 1, 1888, to Dec. 31, 1889	371	Run of furnace.....	19,323	52	1
86	do	Apr. 16, 1889, to Feb. 1, 1890	290	Run of furnace.....	23,486	81	1
87	do	Oct. 1, 1889, to Jan. 31, 1890	104	Run of furnace.....	10,853	98	1
88	do	Oct. 2, 1889, to Jan. 2, 1890	83	Run of furnace.....	7,200	87	1
89	do	Jan. 1, 1890, to Jan. 31, 1890	31	Run of furnace.....	12,595	102	4
180	do	Feb. 1, 1889, to Jan. 31, 1890	365	Run of furnace.....	62,561	86	2
181	do	Feb. 1, 1890, to Jan. 31, 1890	323	Run of furnace.....	46,779	72	2
182	do	May 1, 1889, to May 31, 1889	31	Run of furnace.....	2,774	69	1
183	do	May 1, 1889, to Apr. 30, 1889	355	Run of furnace.....	34,506	95	1
184	do	Nov. 1, 1889, to Nov. 30, 1889	30	Run of furnace.....	1,921	64	1
185	do	Nov. 1, 1889, to Nov. 30, 1889	30	Run of furnace.....	2,792	47	2
186	do	Nov. 1, 1889, to Nov. 30, 1889	30	Run of furnace.....	1,400	113	1
187	do	Jan. 1, 1889, to Dec. 31, 1889	365	Run of furnace.....	73,000	100	2
188	do	Feb. 1, 1889, to Jan. 31, 1890	365	Run of furnace.....	61,133	84	2
189	do	Jan. 1, 1888, to Dec. 31, 1888	315	Run of furnace.....	32,921	105	1
110	do	Jan. 1, 1888, to Dec. 31, 1888	364	Run of furnace.....	30,339	42	2
111	do	Jan. 1, 1888, to Dec. 31, 1888	322	Run of furnace.....	12,652	37	1
112	do	Apr. 1, 1888, to Mar. 31, 1889	355	Run of furnace.....	39,947	109	1
113	do	July 1, 1888, to June 30, 1889	361	Run of furnace.....	42,948	119	1
114	do	Dec. 1, 1888, to Nov. 30, 1889	338	Run of furnace.....	14,855	23	1
115	Continent of Europe.	Jan. 1, 1889, to Dec. 31, 1889	365	Run of furnace.....	33,685	46	2
116	Great Britain.	Jan. 1, 1889, to Apr. 2, 1889	91	Basic.....	13,200	(a)	(a)
117	Continent of Europe.	Jan. 1, 1888, to Dec. 31, 1888	(a)	Thomas.....	(a)	(a)	(a)
118	do	Oct. 1, 1889, to Oct. 31, 1889	31	Thomas.....	1,890	85	1

(a) Not reported.

TABLE II.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

B.—THE APPLIANCES OF PRODUCTION.

[Establishments numbers 1 to 7, 9 to 32, 41, 42, 45 to 50, and 55 to 90 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States, numbers 33 to 39, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 26 to 32, 51 to 63, and 119 are in Great Britain.]

Establishment number.	Furnaces.					Blowing engines.	
	Number.	Diameter of hearth (inches).	Height of stack (feet).	Heating stoves for each.	Years without relining.	Number.	Kind of fuel used.
1	1	122	48	1	3	1	Furnace gas.
2	1	120	36	1	2	1	Furnace gas.
3	1	132	50	1	(a)	1	Furnace gas.
4	1	132	55	1	1	1	Furnace gas and wood.
5	1	120	32	1	2	1	Furnace gas.
6	1	123	36	1	1	1	Furnace gas.
7	1	98	30	1	1	1	Furnace gas.
8	1	138	55	2	1	2	Furnace gas.
9	1	212	80	4	3	2	Furnace gas.
10	1	216	80	4	(b)	2	Furnace gas and oil.
11	1	204	65	3	1	2	Furnace gas.
12	1	192	78	4	2	2	Furnace gas and coal.
13	1	162	66	3	2	1	Furnace gas and coal.
14	2	(c)	(d)	3	1	4	Furnace gas.
15	1	180	75	3	2	2	Furnace gas and coal.
16	2	240	(e)	2	2	4	Furnace gas.
17	1	168	70	3	3	3	Furnace gas.
18	1	190	75	3	2	3	Furnace gas.
19	1	204	80	3	2	3	Furnace gas.
20	1	204	70	3	2	4	Furnace gas.
21	1	240	75	3	2	3	Furnace gas.
22	1	204	70	3	3	4	Furnace gas.
23	1	168	65	3	2	2	Coal.
24	1	180	75	4	2	3	Furnace gas.
25	1	144	65	2	2	2	Furnace gas.
26	1	180	70	3	2	2	Furnace gas.
27	2	(f)	(g)	2	1	3	Furnace gas.
28	1	192	75	3	3	2	Furnace gas.
29	1	192	75	3	2	2	Furnace gas.
30	1	216	65	3	2	2	Furnace gas.
31	1	216	65	3	2	2	Furnace gas and coal.
32	1	192	75	3	2	3	Furnace gas.
33	4	220	80	4	3	3	Furnace gas.
34	3	220	80	4	3	3	Coal.
35	2	236	66	6	(h)	2	Furnace gas and coal.
36	2	240	60	3	7	2	Furnace gas and coal.
37	4	(i)	60	(j)	3	2	Furnace gas and coal.
38	3	210	(k)	4	3	1	Coal.
39	2	228	75	3	12	2	Furnace gas.
40	1	157	56	2	3	1	Furnace gas.
41	1	168	65	2	1	1	Furnace gas.
42	1	180	70	3	2	2	Furnace gas.
43	(l)	(l)	(l)	(l)	(l)	(l)	(l)
44	3	220	80	4	3	3	Coal.
45	(l)	(l)	(l)	(l)	(l)	(l)	(l)
46	1	192	60	3	3	1	Furnace gas.
47	1	180	65	3	3	1	Furnace gas.
48	1	204	65	3	1	2	Furnace gas.
49	1	192	65	4	1	1	Furnace gas and coal.
50	1	212	80	4	3	2	Furnace gas.
51	1	204	80	3	3	2	Furnace gas.
52	3	192	70	2	2	3	Furnace gas and coal.
53	1	192	75	3	3	2	Furnace gas.
54	2	166	55	2	6	2	Furnace gas.
55	1	186	70	3	(i)	3	Furnace gas.
56	1	174	65	3	2	2	Furnace gas.
57	1	228	80	3	(i)	3	Furnace gas.
58	1	240	75	3	2	3	Furnace gas.
59	1	156	54	1	2	1	Furnace gas and coal.
60	3	(i)	(l)	(m)	(n)	2	Furnace gas.
61	4	(i)	60	(j)	3	2	Furnace gas and coal.

a Furnace built 9 years; never yet relined.

b Furnace new, never yet relined.

c One 204 inches and one 136 inches.

d One 70 feet and one 70 feet.

e One 75 feet and one 60 feet.

f One 132 inches and one 164 inches.

g One 45 feet and one 70 feet.

h Furnace built 4 years; never yet relined.

i One 210 inches and three 192 inches.

j One with 6 and three with 5 heating stoves each.

k One 66 feet and two 60 feet.

l Not reported.

m One with 3 and one with 4 heating stoves.

n One 19 and one 17 years.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

B.—THE APPLIANCES OF PRODUCTION—Concluded.

[Establishments numbers 1 to 7, 9 to 32, 41, 42, 46 to 50, and 55 to 59 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 33 to 35, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 26 to 30, 61 to 63, and 116 are in Great Britain.]

Establishment number.	Furnaces.					Blowing engines.	
	Number.	Diameter of bose (inches).	Height of stack (feet).	Heating stoves for each.	Years without relining.	Number.	Kind of fuel used.
62	1	240	75	4	12	2	Furnace gas.
63	1	240	75	4	13	2	Furnace gas.
64	1	(a)	(a)	4	3	1	Furnace gas and coal.
65	1	144	62	2	3	1	Furnace gas.
66	1	192	75	3	1½	2	Furnace gas.
67	1	192	75	2	3	2	Furnace gas.
68	1	186	72	2	1½	4	Furnace gas and coal.
69	2	192	75	2	(b)	4	Furnace gas.
70	1	174	67	2	5	3	Furnace gas.
71	1	192	75	2	1½	2	Furnace gas.
72	1	222	77	2	2½	3	Furnace gas.
73	1	186	69	2	2	1	Furnace gas.
74	1	186	56	2	2	1	Furnace gas.
75	1	192	60	2	2	2	Furnace gas and coal.
76	1	168	63	4	1½	2	Furnace gas and coal.
77	1	186	72	2	2	2	Furnace gas and coal.
78	1	156	50	2	2½	1	Furnace gas.
79	1	162	60	2	3	2	Furnace gas.
80	2	204	65	2	2½	2	Furnace gas and coal.
81	1	196	65	2	2½	3	Furnace gas.
82	1	160	61	2	2	1	Coal.
83	1	144	60	2	2	1	Furnace gas and coal.
84	1	162	60	2	2	1	Furnace gas.
85	1	138	43	1	6	1	Furnace gas.
86	1	168	60	2	2	2	Furnace gas and coal.
87	1	148	60	2	1½	1	Furnace gas and coal.
88	1	168	70	2	1½	2	Furnace gas.
89	1	180	65	4	1½	2	Furnace gas and coal.
90	2	204	66	2	2½	4	Furnace gas and coal.
91	2	204	75	(c)	2	6	Furnace gas and coal.
92	2	(d)	(e)	2	2½	5	Furnace gas and coal.
93	1	192	75	2	(a)	2	Furnace gas and coal.
94	1	216	75	2	2	2	Furnace gas and coal.
95	1	164	68	2	3	2	Furnace gas and coal.
96	1	210	65	2	(a)	2	Furnace gas and coal.
97	1	192	75	2	(a)	2	Furnace gas and coal.
98	1	192	75	2	(a)	2	Furnace gas.
99	4	240	60	4	(a)	12	Furnace gas and coal.
100	2	(f)	(g)	2	2½	5	Furnace gas and coal.
101	2	204	75	4	(a)	4	Furnace gas and coal.
102	1	204	63	4	2	3	Furnace gas.
103	1	192	66	2	2	2	Furnace gas and coal.
104	1	156	60	2	2	2	Furnace gas.
105	2	(h)	65	2	2½	4	Furnace gas.
106	1	192	69	2	2½	2	Furnace gas.
107	2	216	75	2	2½	5	Furnace gas.
108	2	240	70	2	1½	4	Furnace gas.
109	1	192	70	2	1½	2	Furnace gas.
110	2	(i)	60	2	2½	4	Furnace gas and coal.
111	1	150	61	4	(a)	2	Furnace gas.
112	1	204	75	2	(a)	2	Furnace gas and coal.
113	1	222	66	4	2	3	Furnace gas.
114	1	132	60	2	1½	1	Furnace gas and coal.
115	2	(j)	(k)	(l)	8	2	Furnace gas and coal.
116	(a)	(a)	(a)	(a)	(a)	(a)	Furnace gas.
117	(a)	(a)	(a)	(a)	(a)	(a)	(a)
118	1	(a)	(a)	3	7	1	Furnace gas and coal.

a Not reported.

b One furnace in use 2 years; one in use 3 years, neither ever relined.

c One with 3 and one with 4 heating stoves.

d One 198 inches and one 213 inches.

e One 63 feet and one 75 feet.

f One 192 inches and one 204 inches.

g One 65 feet and one 79 feet.

h One 163 inches and one 190 inches.

i One 132 inches and one 166 inches.

j One 222 inches and one 236 inches.

k One 50 feet and one 62 feet.

l One with 6 and one with 2 heating stoves.

PIG IRON.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

C.—THE ASSEMBLAGE OF THE MATERIALS—Concluded.

[Establishments numbers 1 to 7, 8 to 22, 41, 42, 48 to 50, and 65 to 99 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 33 to 35, 44, 45 to 47, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 38, 61 to 63, and 116 are in Great Britain.]

Establishment number.	Coal mines.			Ore mines.			Limestone quarries.			Coke ovens.		
	Transportation.		Miles distant.	Transportation.		Miles distant.	Transportation.		Miles distant.	Transportation.		Miles distant.
	Means.	Cost per nominal ton.		Means.	Cost per nominal ton.		Means.	Cost per nominal ton.		Means.	Cost per nominal ton.	
75	(a)	Rail	(a)	830	Rail and boat.	\$1.28	(a)	(a)	(a)	111	Rail	\$1.25
76	58	Rail	\$0.78	1,000	Rail and boat.	3.00	20	Rail ...	\$0.40	125	Rail	1.25
77	2	Rail ....	.08	620	Rail and boat.	1.08	30	Rail ...	.40	140	Rail	1.25
78	44	Rail	1.00	280	Rail	2.00	1	Rail ....	.10	310	Rail	2.14
79	145	Rail	(a)	78	Rail ....	.75	32	Boat ....	.35	215	Rail	1.72
80	20	Rail ....	.20	20	Rail ....	.35	2	Rail ....	.02	(b)	(b)	(b)
81				7	Rail ....	.50	148	Rail ....	.85	(b)	(b)	(b)
82	1	Tram ....	.10	1	Tram ....	.15	1	Tram ....	.10	1	Tram ....	.10
83	2	Team	(a)	200	Rail	1.20	1	Team ....	.20	1	Team ....	.08
84	145	Rail	(a)	78	Rail	(a)	32	Boat ....	.35	215	Rail	1.72
85	100	Rail	(a)	15	Rail ....	.03	10	(a)	(a)	200	(a)	(a)
86	58	Rail ....	.70	1,000	Rail and boat.	2.50	25	Rail ....	.50	150	Rail	1.25
87	58	Rail ....	.70	900	Rail and boat.	2.60	25	Rail ....	.40	125	Rail	1.25
88				14	Rail ....	.45	1	Rail ....	.05	115	Rail	1.13
89	58	Rail ....	.70	1,000	Rail and boat.	2.50	25	Rail ....	.50	140	Rail	1.25
90	600	Rail and boat.	1.05	295	Rail and boat.	1.45	20	Rail ...	.04	690	Rail	2.05
91	3	Rail ....	.04	1	Rail ....	.04	25	Rail ....	.20	2	Rail ....	.04
92	6	Rail	(a)	8	Rail ....	.25	4	Rail	(a)	(b)	(b)	(b)
93	80	Rail	1.00	35	Rail ....	.35	10	Rail ....	.25	1,200	Rail	2.15
94	37	Rail ....	.75	25	Rail ....	.20	24	Rail ....	.25	87	Rail ....	.75
95	6	Rail	(a)	10	Rail	(a)	23	Rail	(a)	8	Rail	(a)
96	25	Rail ....	.35	15	Rail ....	.25	2	Rail ....	.10	35	Rail ....	.35
97	42	Rail ....	.55	(c)	Rail	(c)	7	Rail ....	.40	(d)	Rail	(d)
98				50	Rail ....	.65	21	Rail ....	.25	120	Rail ....	.75
99	(a)	Rail	(a)	72	Rail ....	.18	8	Rail ....	.25	1	Rail	(a)
100	12	Rail ....	.20	10	Rail ....	.25	6	Rail ....	.25	(b)	(b)	(b)
101	12	Rail ....	.20	10	Rail ....	.25	6	Rail ....	.25	12	Rail ....	.25
102				(f)	(f)	(f)	1	Rail ....	.04	50	Rail ....	.50
103	150	Rail ....	.60	100	Rail and boat.	.53	15	Rail ....	.25	(g)	Rail	(g)
104				90	Rail ....	.65	1	Rail ....	.15	22	Rail ....	.30
105	(a)	(a)	(a)	25	Rail and boat.	.30	1	Rail	(a)	(a)	(a)	(a)
106				90	Rail ....	.65	6	Rail ....	.20	(g)	Rail	(g)
107				114	Rail ....	.90	3	Rail		3	Rail ....	.00
108				19	Rail ....	.25	(h)	(h)	(h)	17	Rail ....	.25
109				(i)	Rail	(i)	30	Rail ....	.28	107	Rail ....	.00
110	120	Rail ....	.75	5		.25	4	Rail ....	.20	120	Rail ....	.75
111				1	Rail ....	.10	20	Rail ....	.25	120	Rail ....	.25
112				30	Rail ....	.35	20	Rail ....	.30	90	Rail ....	.00
113	50	Rail ....	.75	2	Rail ....	.15	1	Rail ....	.10	(b)	(b)	(b)
114				42	Rail ....	.40	62	Rail ....	.40	100	Rail	1.15
115	6	Rail ....	.07	5	Rail ....	.20	1	Rail ....	.06	1	Team ....	.00
116	20	Rail ....	.40	62	Rail	1.66	40	Rail ....	.40	20	Rail ....	.25
117	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
118	75	Rail		(f)	(f)	(f)				(j)	Rail	(j)

a Not reported.

b Coke ovens located at works.

c Part of the ore is brought 6 miles at a cost of 10 cents per ton, and part 75 miles at a cost of 70 cents per ton.

d Part of the coke is brought 125 miles at a cost of \$1.15 per ton, and part 375 miles at a cost of \$2.25 per ton.

e Part of the coal is brought $\frac{1}{2}$ mile at a cost of 3 $\frac{1}{2}$ cents per ton, and part 9 miles at a cost of 15 cents per ton.

f Ore mines located at works.

g Part of the coke is brought 12 miles at a cost of 30 cents per ton, and part 600 miles at a cost of \$1.50 per ton.

h Limestone quarries located at works.

i Part of the ore is brought 11 miles at a cost of 30 cents per ton, and part 60 miles at a cost of 35 cents per ton.

j Part of the coke is brought 145 miles at a cost of \$1.25 per ton, and part 241 miles at a cost of \$2.00 per ton.

PIG IRON.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

D.—CHEMICAL ANALYSIS OF ORE—Continued.

[Establishments numbers 1 to 7, 9 to 32, 41, 42, 46 to 59, and 65 to 90 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 15 to 25, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.]

Estab- lish- ment num- ber.	Kind of ore.	Ore used (tons of 2,240 pounds).	Cost.	Per cent. of—						
				Iron.	Manga- nese.	Phos- pho- rus.	Sul- phur.	Silica.	Alu- mina.	Lime.
33	(b)	a199,788	\$639,456	55.006	.850	.015	.024	11.450	(b)	(b)
34	(b)	(a)	(a)	28.600	1.800	.022	.024	4.150	(b)	(b)
35	Hematite	2,569	10,238	55.000	.930	.015	.024	11.450	(b)	(b)
36	Brown hematite	163,689	749,718	54.500	(b)	.019	.020	10.500	(b)	(b)
37	Brown hematite	84,732	194,669	50.350	(b)	.040	.000	12.980	(b)	(b)
	(b)	76,915	282,974	50.350	(b)	.040	.000	12.980	(b)	(b)
	(b)	1,326	2,598	36.006	.120	.010	.040	12.000		
	(b)	1,903	5,137	54.000				5.008		
38	(b)	1,077	2,706	40.000		.020		11.000	14.000	
	(b)	3,622	10,859	60.000			.300	4.000		
	Hematite	49,763	184,548	50.000				11.000		
39	Hematite	118,778	401,945	(b)	(b)	(b)	(b)	(b)	(b)	(b)
40	Spathic	1,662	7,220	49.710	10.120	Trace	.257	.570	(b)	c. 250
	Manganiferous	498	1,748	22.270	18.610	.016	Trace	28.880	(b)	(b)
41	Fossiliferous hematite	20,302	36,287	44.400	.190	.530	.310	19.000	5.900	6.850
42	Fossiliferous hematite	63,732	108,137	42.520	(b)	.750	.270	14.940	4.800	6.220
43	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
	(b)	a 3,377	a 5,601	28.350	.100	.780	.010	17.800	(b)	(b)
44	(b)	(a)	(a)	39.350	(b)	.625		11.000	(b)	(b)
	(b)	(a)	(a)	49.000	.150	.750	.000	14.000	(b)	(b)
45	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
46	Hematite	9,110	36,907	58.492	.630	2.306		5.000	(b)	5.510
	Magnetite	17,570	55,754	64.500	(b)	.050	Trace	5.500	2.200	2.300
	Magnetite	3,686	10,586	66.180	(b)	1.070		.700		
47	Hematite	12,285	21,499	44.310	Trace	.430	(b)	(b)	(b)	6.030
	Hematite	6,599	27,947	55.080	.070	(b)	.116	(b)	1.120	2.490
48	(b)	27,748	131,893	60.000	(b)	.215	.040	3.540	(b)	(b)
	Blackband	8,400	29,674	42.630	(b)	.189	.318	24.750	(b)	(b)
49	Hematite	17,630	77,717	55.000	(b)	.420	(b)	4.250	(b)	(b)
	Blackband	10,178	25,440	42.000	(b)	6.438	(b)	12.000	(b)	(b)
50	(b)	81,851	175,841	57.650	.460	.250	(b)	6.000	(b)	(b)
51	Specular, magnetite, and hematite	23,233	161,323	64.790	(b)	.041	(b)	1.620	(b)	(b)
52	Specular and hematite	61,016	235,926	63.000	(b)	.120	.050	8.000	(b)	(b)
53	Hematite	62,711	315,046	63.000	(b)	.075	Trace	4.500	(b)	(b)
54	Magnetite	1,772	5,582	59.000	(b)	.030	.700	9.000	(b)	(b)
	(b)	32,834	197,006	60.000	(b)	.030	.020	5.000	(b)	(b)
55	(b)	36,374	159,481	60.700	(b)	.400	.040	11.000	(b)	(b)
	(b)	16,383	41,387	36.000	(b)	.330	Trace	10.000	(b)	(b)
56	(b)	11,049	61,440	60.000	(b)	.540	Trace	6.320	(b)	(b)
	(b)	809	1,777	63.000	.783	.120	(b)	4.250	(b)	.100
57	Hematite	8,424	50,241	63.000	.530	.075		4.500	1.950	1.540
58	Hematite	17,962	74,690	60.000	(b)	.069	.025	4.000	(b)	(b)
59	Calcareous	142,915	224,203	36.000		1.200		12.000	(b)	12.000
60	Ironstone	232	823	29.500	.750	.800	.030	17.000	1.800	4.000
61	Hematite	5,441	17,509	50.350	(b)	.044	.060	12.930	(b)	(b)
62	Ironstone and hematite	64,072	62,495	(b)	(b)	(b)	(b)	(b)	(b)	(b)
63	Ironstone	25,538	27,346	(b)	(b)	(b)	(b)	(b)	(b)	(b)
64	Limonite	2,789	1,243	23.500	Trace	.650	Trace	13.000	d5.000	e4.000
	Limonite	1,321	1,079	24.500	Trace	.560	Trace	3.000	d1.000	e24.500
	(b)	5,910	28,691	65.000	(b)	.190	Trace	4.600	(b)	(b)
65	(b)	5,669	17,081	59.000	(b)	.250	Trace	6.500	(b)	(b)
	(b)	1,790	2,499	58.000	(b)	.500	Trace	10.000	(b)	(b)
	Specular	8,426	(a)	62.860	(b)	.081	Trace	4.790	(b)	(b)
66	Hematite	42,120	630,891	60.370	(b)	.129	.025	7.250	(b)	(b)
	Hematite	16,852	(a)	44.340	(b)	.210	.048	22.530	(b)	(b)
67	Specular	32,119	172,553	68.400	(b)	.043	(b)	3.600	(b)	(b)
	Red hematite	11,408	45,125	62.620	.200	.110	(b)	3.760	(b)	.740
68	Hematite	14,446	30,356	60.000	(b)	.120	.050	9.670	(b)	(b)

a Quantities and costs of the several varieties of ores not separately reported.

b Not reported.

c Limestone.

d Aluminium.

e Costs of the several varieties of ores not separately reported.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

D.—CHEMICAL ANALYSIS OF ORE—Continued.

(Establishments numbers 1 to 7, 9 to 22, 41, 42, 48 to 59, and 65 to 90 are in the northern district of the United States; numbers 8 and 91 to 114 are in the southern district of the United States; numbers 23 to 35, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.)

Establishment number.	Kind of ore.	Ore used (tons of 2,240 pounds).	Cost.	Percent. of—						
				Iron.	Manganese.	Phosphorus.	Sulphur.	Silica.	Alumina.	Lime.
60	Magnetite	5,635	\$27,770	80.000	(a)	.080	.030	7.000	(a)	(a)
	Hematite	53,890	228,118	80.000	(a)	.215	.040	2.540	(a)	(a)
	Blackband	2,841	10,655	45.000	(a)	.210	.230	22.700	(a)	(a)
	Limonite	10,368	32,256	44.000	(a)	.150	.440	14.000	(a)	(a)
70	(a)	10,240	23,805	50.000	(a)	.700	(a)	8.000	(a)	(a)
	Hematite	10,240	48,640	82.000	(a)	.060	(a)	4.000	(a)	(a)
71	Specular and hematite	93,908	422,935	62.000	(a)	.095	Trace	7.000	(a)	(a)
72	Hematite	8,896	34,019	42.000	(a)	.200	Trace	18.000	(a)	(a)
	Hematite	35,191	210,632	62.000	(a)	.200	Trace	6.500	(a)	(a)
	Carbonate	8,112	10,526	35.000	(a)	.300	500	15.000	(a)	(a)
	(a)	3,747	24,543	60.650	(a)	.100	(a)	4.000	(a)	(a)
73	Hematite	5,922	17,174	40.000	(a)	1.150	(a)	20.000	(a)	(a)
	(a)	15,702	87,335	55.000	(a)	.140	2.000	10.000	(a)	(a)
74	(a)	66,852	243,408	(a)	(a)	(a)	(a)	(a)	(a)	(a)
	Specular	10,247	57,241	67.000	(a)	.040	.050	4.500	(a)	(a)
75	Hematite	31,623	102,285	60.000	(a)	.060	.050	5.000	(a)	(a)
76	Specular, magnetite, and hematite	40,395	187,622	81.100	(a)	.218	.040	3.640	(a)	(a)
77	Specular	15,687	93,558	82,700	(a)	.090	Trace	4,740	(a)	(a)
	Hematite	17,671	101,352	62,500	(a)	.065	.022	3,500	(a)	(a)
	(a)	435	2,526	85,890	(a)	.200	Trace	2,700	(a)	(a)
	Magnetite	47	240	54,350	(a)	.120	.040	5.000	(a)	(a)
78	Carbonate	195	474	18.000	(a)	.040	1,500	10.000	(a)	(a)
	Hematite	400	1,202	37.000	(a)	.700	Trace	35.000	(a)	(a)
	Magnetite	435	1,107	50,300	(a)	.135	(a)	24,370	(a)	(a)
	Fossiliferous	1,445	3,251	45,110	(a)	.247	(a)	12,510	(a)	(a)
79	(a)	640	3,936	36.000	(a)	(a)	7,890	(a)	(a)	(a)
	Hematite	561	1,683	(a)	(a)	(a)	(a)	19,700	(a)	(a)
	Fossiliferous	4,428	10,053	(a)	(a)	(a)	(a)	(a)	(a)	(a)
	Hematite	2,717	8,500	(a)	(a)	(a)	(a)	(a)	(a)	(a)
81	(a)	9,528	34,786	60.000	(a)	.200	(a)	6.000	(a)	(a)
	Hematite	7,062	23,576	45.000	(a)	.070	.020	21.000	(a)	(a)
	Carbonate	11,984	36,192	35.000	(a)	.180	.130	15.000	(a)	(a)
	(a)	3,942	10,967	(a)	(a)	(a)	(a)	(a)	(a)	(a)
82	Magnetite	2,172	11,892	60.000	(a)	(a)	(a)	4.000	(a)	(a)
	Hematite	953	8,335	45.000	(a)	(a)	(a)	10.000	(a)	(a)
	(a)	192	490	38.000	(a)	(a)	(a)	10.000	(a)	(a)
	Magnetite	2,407	7,509	51,366	(a)	.135	(a)	24,270	(a)	(a)
84	Fossiliferous	4,900	11,759	45,110	(a)	.247	(a)	12,510	(a)	(a)
	Hematite	8,680	16,002	(a)	(a)	(a)	(a)	19,780	(a)	(a)
	(a)	100	825	(a)	(a)	(a)	(a)	(a)	(a)	(a)
	Hematite	3,860	6,168	(a)	(a)	(a)	(a)	(a)	(a)	(a)
86	Specular and hematite	29,061	112,637	80.000	(a)	.300	.030	4.000	(a)	(a)
67	Specular	1,734	5,835	49.000	(a)	.080	(a)	21.000	(a)	(a)
	Hematite	13,457	67,134	61.000	(a)	.040	(a)	7.140	(a)	(a)
68	Hematite	32,934	102,375	43.030	(a)	.250	(a)	26,920	(a)	(a)
	(a)	1,703	8,945	(a)	(a)	(a)	(a)	(a)	(a)	(a)
89	(a)	62,370	326,550	59.720	(a)	.063	(a)	5.500	(a)	(a)
90	Specular and hematite	50,656	249,564	80.000	(a)	.070	Trace	4.750	(a)	(a)
91	Soft red fossiliferous	54,215	60,931	47.790	(a)	(a)	(a)	16,330	3,170	Trace
	Hard red fossiliferous	(b)	(b)	33,480	(a)	(a)	(a)	11,480	5,670	29,430
92	Soft fossiliferous	41,303	36,714	42,350	(a)	.244	(a)	10,640	(a)	.730
	Hard fossiliferous	41,303	39,145	39,180	(a)	.202	(a)	10,120	(a)	16,460
93	Brown hematite	15,158	21,818	49.620	(a)	.750	(a)	19,600	(a)	(a)
94	Brown hematite	74,804	117,427	46,820	(a)	.....	.....	10,230	5,860	.080
95	Red fossiliferous	30,617	37,998	48,930	(a)	.259	.....	19,340	(a)	(a)
	Brown hematite	8,152	13,440	40,540	(a)	.430	.....	22,500	(a)	(a)
	(a)	28,694	28,360	50.000	(a)	1.250	(a)	13,000	(a)	(a)
	(a)	20,307	29,672	61,750	(a)	1.600	(a)	17,000	(a)	8.000
96	Brown hematite	1,895	2,783	48,250	(a)	.160	(a)	10,000	(a)	(a)
	Hard red hematite	10,920	18,021	54,340	(a)	.424	.....	7,410	(a)	.610
	Soft red hematite	5,480	7,549	56.000	(a)	.391	.....	(a)	(a)	5,760
	Brown hematite	5,460	9,708	47,500	(a)	.530	.....	7,560	(a)	.....

a Not reported.

b Quantities and costs of the several varieties of ores not separately reported.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

D.—CHEMICAL ANALYSIS OF ORE—Concluded.

[Establishments numbers 1 to 7, 9 to 33, 41, 42, 48 to 59, and 65 to 99 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 35 to 39, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 38, 61 to 63, and 116 are in Great Britain.]

Establishment number.	Kind of ore.	Ore used (tons of 2,240 pounds)	Cost.	Per cent. of—						
				Iron.	Manganese.	Phosphorus.	Sulphur.	Silica.	Alumina.	Lime.
98	Brown hematite	18,597	\$30,325	47.500	(a)	.250	-----	12.500	(a)	(a)
99	Soft red fossiliferous	11,634	12,400	52.000	(a)	.240	-----	18.000	(a)	(a)
	Red fossiliferous	18,745	21,014	39.000	(a)	.280	-----	10.500	(a)	14.000
	Brown hematite	264	413	48.000	(a)	.000	-----	12.000	(a)	(a)
100	Red hematite fossiliferous, hard	72,748	83,587	28.230	(a)	(a)	(a)	8.220	(a)	18.610
	Red hematite	47,720	41,128	50.000	(a)	(a)	(a)	18.030	(a)	(a)
	Brown hematite	2,707	2,808	51.210	(a)	(a)	(a)	9.790	2.900	.750
101	Red hematite fossiliferous, soft	17,475	15,067	51.180	(a)	(a)	(a)	12.420	(a)	(a)
	Red hematite fossiliferous, hard	42,220	35,700	38.230	(a)	(a)	(a)	8.990	(a)	18.610
	Red hematite fossiliferous, soft	9,345	7,896	51.180	(a)	(a)	(a)	12.420	(a)	(a)
102	Red hematite	44,971	37,100	50.000	(a)	(a)	(a)	18.030	(a)	(a)
	Brown hematite	13,446	11,870	51.210	(a)	(a)	(a)	9.790	2.900	.280
	Hard red hematite	3,777	3,720	28.000	(a)	.300	(a)	10.000	(a)	344.000
103	Soft red hematite	1,573	3,210	55.000	(a)	.700	(a)	16.080	(a)	(a)
	Brown hematite	2,201	4,894	48.000	(a)	.250	-----	25.000	(a)	(a)
	Red fossiliferous, hard	10,020	14,092	28.000	(a)	.300	(a)	8.210	(a)	(a)
104	Red fossiliferous, soft	12,115	19,444	49.420	(a)	.050	-----	12.000	(a)	(a)
	Red fossiliferous	8,351	18,248	56.240	(a)	.000	-----	12.800	(a)	(a)
	Brown hematite	37,810	73,003	50.540	(a)	.290	.010	.120	(a)	(a)
105	Soft red hematite	743	1,615	56.000	(a)	.350	-----	13.000	(a)	(a)
	Brown hematite	2,032	5,990	48.000	(a)	.250	-----	28.000	(a)	(a)
	Soft and hard fossiliferous	7,252	11,023	38.800	(a)	.500	.030	8.000	(a)	(a)
106	Fossiliferous	2,195	4,787	50.000	(a)	.450	.020	8.000	(a)	(a)
	Hard fossiliferous	378	511	23.000	(a)	.350	.010	5.000	(a)	(a)
	Soft fossiliferous	605	974	48.000	(a)	.400	.020	8.000	(a)	(a)
107	Brown hematite	2,982	8,441	45.000	(a)	.400	.020	12.000	(a)	(a)
	Red hematite	72,000	161,008	51.000	(a)	.290	-----	11.500	(a)	(a)
	Soft red hematite	24,000	54,008	54.000	(a)	.740	-----	11.000	(a)	(a)
108	Hematite	24,000	48,008	43.000	(a)	.510	-----	18.000	(a)	(a)
	Brown hematite	24,000	60,000	51.000	(a)	.900	-----	10.500	(a)	(a)
	Hematite	58,480	124,242	50.000	(a)	.300	(a)	13.000	(a)	(a)
109	Hematite	97,034	126,239	30.000	(a)	.400	(a)	10.000	(a)	(a)
	Limonsite	24,984	53,709	47.000	(a)	.700	(a)	15.000	(a)	12.000
	Brown hematite	83,997	162,408	52.328	.564	.101	.191	8.420	5.327	1.514
110	Brown hematite	61,000	103,668	49.000	-----	.482	-----	15.160	2.810	.290
111	Brown hematite	28,781	50,967	42.000	(a)	.013	-----	13.000	(a)	(a)
112	Brown hematite	93,000	187,500	44.000	(a)	.050	.003	12.000	(a)	(a)
113	Brown hematite	98,709	217,594	42.000	(a)	.003	-----	23.500	(a)	(a)
114	Brown hematite	21,738	34,058	45.532	.968	1.577	.624	11.600	7.475	.950
115	Magnetite	4,253	14,480	54.480	-----	.055	(a)	14.580	(a)	(a)
116	(a)	70,169	154,772	28.000	(a)	(a)	-----	-----	(a)	(a)
117	Swedish magnetite	(a)	(a)	82.000	(a)	2.000	-----	-----	(a)	(a)
118	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
119	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
120	Limonsite	8,021	2,534	24.500	Trace	.650	Trace	12.000	43.000	4.000
121	Limonsite	917	430	22.000	(a)	.550	Trace	8.000	64.000	10.500

(a) Not reported.

(b) Carbonate of lime.

(c) Quantities and costs of the several varieties of ore not separately reported.

(d) Alumina.

(e) Silica.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

E.—QUANTITY AND COST OF MATERIALS CHARGED INTO THE FURNACE.

[Establishments numbers 1 to 7, 9 to 32, 41, 42, 46 to 55, and 55 to 90 are in the northern district of the United States; numbers 4, and 91 to 114 are in the southern district of the United States; numbers 23 to 35, 40, 45 to 45, 50, 54, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.]

Estab- lish- ment num- ber.	Tons of 2,240 pounds.					Cost.					
	Ore.	Cinder, scrap, etc.	Lime- stone.	Coke.	Coal.	Ore.	Cinder, scrap, etc.	Lime- stone.	Coke.	Coal.	Total.
1	7, 116		2, 580		52, 804	925, 527		2, 280		521, 116	851, 232
2	40, 331		1, 877		522, 578	99, 048		4, 314		523, 593	329, 855
3	21, 198		1, 888		511, 279	81, 645		1, 792		502, 034	145, 471
4	25, 429		2, 238		513, 487	71, 658		2, 238		503, 811	137, 897
5	7, 550		1, 700		54, 018	15, 963		880		527, 000	43, 533
6	7, 360		1, 100		55, 174	21, 344		825		524, 974	51, 144
7	3, 945		791		52, 054	15, 750		989		518, 400	35, 149
8	32, 492		3, 350		513, 568	28, 528		3, 394		579, 784	111, 698
9	30, 413	2, 789	7, 440	29, 652		145, 099	43, 987	7, 902	582, 851		241, 839
10	84, 995	1, 575	16, 378	55, 197		424, 681	3, 441	23, 678	285, 907		717, 067
11	34, 022	1, 311	9, 988	29, 610	6, 480	189, 317	3, 736	5, 040	84, 632	9, 435	264, 060
12	35, 047	2, 951	8, 119	22, 321		213, 410	17, 009	8, 170	55, 214		304, 497
13	36, 473	1, 038	9, 678	22, 569		220, 658	3, 367	10, 080	70, 508		313, 613
14	145, 700		41, 496	107, 700		796, 438		32, 532	239, 740		1, 118, 711
15	52, 489	4, 480	19, 721	37, 067	1, 875	295, 377	11, 081	20, 491	110, 467	2, 790	440, 128
16	119, 938	1, 000	25, 000	71, 873		683, 959	2, 800	25, 200	261, 625		976, 584
17	48, 090		16, 000	33, 036	2, 879	326, 000		12, 000	111, 000	3, 000	462, 000
18	48, 917	3, 742	14, 927	37, 560		248, 448	5, 528	16, 132	90, 284		363, 489
19	41, 979	325	10, 766	25, 408	3, 607	248, 424	1, 500	10, 977	75, 928	4, 096	341, 627
20	79, 718		23, 335	19, 554	221, 900	394, 594		21, 506	78, 050	75, 555	568, 305
21	35, 295		9, 225	18, 571		221, 719		9, 225	40, 580		271, 504
22	40, 186		10, 754	9, 857	411, 040	221, 021		12, 045	48, 024	38, 640	819, 790
23	49, 376		9, 351	26, 007	4, 023	254, 681		7, 373	72, 454	9, 938	354, 446
24	39, 099		7, 749	26, 317	1, 873	216, 404		5, 851	73, 214	3, 711	299, 180
25	43, 075		8, 978	27, 285	3, 948	227, 580		6, 680	78, 060	6, 408	317, 578
26	51, 392		10, 785	34, 885	8, 490	285, 119		7, 993	99, 128	8, 803	399, 051
27	67, 682		19, 522	57, 771	839	386, 129		15, 540	167, 984	1, 083	570, 736
28	75, 678	2, 146	35, 797	52, 304		457, 096	796	28, 098	123, 253		610, 142
29	47, 388	5, 277	20, 124	50, 323		363, 807	10, 564	21, 829	130, 029		469, 419
30	33, 803	600	6, 690	25, 764		193, 478	1, 800	10, 234	69, 327		275, 039
31	31, 700	580	9, 441	25, 748		178, 335	1, 746	10, 526	73, 457		294, 058
32	34, 679	4, 351	14, 919	29, 941	581	201, 244	8, 995	14, 007	84, 559	986	310, 391
33	192, 786	(e)	55, 464	122, 908		688, 456	(e)	23, 433	312, 901		1, 025, 490
34	2, 489	(e)	899	1, 644		10, 295	(e)	401	4, 890		15, 468
35	182, 689		38, 332	89, 807		740, 718		22, 688	274, 594		1, 044, 963
36	58, 732	1, 184	10, 318	27, 773		194, 609	4, 728	5, 425	67, 919		292, 741
37	79, 945	5, 302	14, 678	55, 087		262, 974	9, 980	7, 718	125, 875		406, 547
38	57, 951	5, 392	14, 186	46, 312		206, 804	10, 111	7, 059	84, 509		317, 323
39	138, 778		20, 924	59, 783	787	401, 945		16, 568	160, 778	1, 914	581, 223
40	2, 800		593	1, 156		8, 996		606	5, 000		15, 172
41	20, 302		4, 866	7, 407	5, 395	38, 287		2, 893	32, 354	18, 893	98, 417
42	69, 752		20, 268	27, 147	412, 438	109, 137		15, 201	146, 865	44, 941	318, 144
43	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)
44	5, 377	(e)	667	1, 417		5, 801	(e)	257	4, 129		9, 907
45	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)
46	26, 680	475	8, 945	1, 727	421, 323	92, 681	3, 819	9, 708	8, 796	80, 725	198, 706
47	24, 572		4, 680	12, 556	4, 680	66, 042		4, 680	49, 140	16, 280	136, 242
48	30, 208	5, 248	15, 800	22, 484	5, 179	161, 677	15, 738	9, 500	92, 400	9, 280	288, 393
49	27, 806	3, 048	10, 227	19, 373	4, 879	103, 157	7, 620	10, 237	65, 094	10, 928	197, 026
50	81, 851	4, 858	12, 957	35, 996		178, 641	10, 427	13, 763	144, 288		344, 119
51	39, 332	7, 219	8, 338	29, 297		161, 223	17, 000	11, 142	139, 659		329, 129
52	61, 016	21, 631	36, 091	66, 554		335, 999	52, 131	31, 399	173, 619		603, 147
53	62, 711	25, 096	31, 772	66, 785		315, 046	98, 922	23, 528	180, 690		618, 974
54	34, 606	11, 299	13, 238	6, 932	424, 309	262, 568	17, 764	11, 326	31, 056	74, 728	237, 364
55	36, 374	(e)	15, 836	30, 708		158, 491	(e)	14, 915	56, 617		223, 993
56	27, 432	2, 093	10, 989	21, 444		102, 897	5, 641	8, 307	50, 186		169, 951
57	309		147	174		1, 777		162	439		2, 878
58	9, 424	9, 271	9, 256	9, 900		66, 241	27, 813	9, 256	21, 622		114, 633

a Oyster shells.

b Charcoal.

c Represents the cost of wood entering into the charcoal. The labor cost of converting the wood into charcoal is inseparably combined with furnace labor.

d Anthracite coal.

e The quantity and cost of cinder, scrap, etc., are inseparably combined with quantity and cost of ore.

f Including 220 tons of manganese, costing \$750.

g Not reported.

Category	Item	Quantity	Unit	Value
Food	Wheat	100	kg	1000
	Rice	50	kg	500
Clothing	Shirts	20	pieces	400
	Trousers	10	pieces	200
Furniture	Tables	5	pieces	1500
	Chairs	10	pieces	500
Electronics	TVs	3	pieces	900
	Refrigerators	2	pieces	400
Transportation	Trucks	1	unit	10000
	Motorcycles	5	units	5000
Miscellaneous	Books	100	units	100
	Stationery	50	units	50

TABLE I.—COST OF PRODUCTION OF **PIG IRON** AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

F.—PROPORTIONS OF MATERIALS CHARGED INTO THE FURNACE.

[Establishments numbers 1 to 7, 9 to 22, 41, 42, 44 to 50, and 55 to 90 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 23 to 35, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.]

Establishment number.	Tons of materials (2,240 pounds) to 1 ton of product.					Cost of materials per ton.				
	Ore.	Cinder, scrap, etc.	Limestone.	Coke.	Coal.	Ore.	Cinder, scrap, etc.	Limestone.	Coke.	Coal.
1	2.462		a. 898		b. 970	84.192		a. \$0.112		c. \$7.531
2	1.617		.077		b. 905	2.478		2.239		b. 9.003
3	1.800		.180		b. 957	2.852		.950		b. 5.500
4	1.822		.210		b. 906	2.818		.088		b. 4.731
5	2.550		.567		b. 1.839	2.050		.800		b. 6.720
6	2.944		.410		b. 2.070	2.000		.750		b. 5.600
7	2.404		.500		b. 1.298	3.985		1.250		b. 8.938
8	2.257		.273		b. 942	.878		1.810		b. 5.881
9	1.034	.150	.400	1.109		4.771	\$2.147	1.062	\$4.012	
10	1.030	.031	.337	1.070		4.996	2.185	1.268	4.825	
11	1.614	.062	.332	.978	.208	5.303	2.850	.850	3.136	1.434
12	1.380	.116	.370	.879		6.028	3.998	1.006	2.972	
13	1.474	.042	.391	1.196		6.030	2.250	1.042	2.680	
14	1.722		.490	1.274		5.468		.781	2.688	
15	1.897	.126	.000	1.127	.057	5.628	2.469	1.639	3.970	1.468
16	1.648	.044	.343	.996		5.719	3.800	1.008	3.040	
17	1.600		.534	1.101	.080	7.000		.790	3.300	1.130
18	1.513	.146	.681	1.458		6.381	2.378	1.061	2.410	
19	1.649	.013	.423	.906	.142	5.927	5.636	1.020	2.989	1.136
20	1.620		.488	.446	d. 509	4.950		1.008	3.920	d. 3.450
21	1.645		.430	.899		6.282		1.000	2.184	
22	1.820		.487	.448	d. 500	1.120	4.872	1.120	2.500	d. 3.500
23	1.621		.908	.836	.132	5.371		.788	2.786	2.470
24	1.641		.321	1.086	.069	5.451		.754	2.744	2.218
25	1.061		.331	1.006	.145	5.046		.728	2.821	1.623
26	1.833		.241	1.111	.206	5.848		.736	2.806	1.356
27	1.625		.469	1.388	.020	6.707		.706	2.908	1.291
28	1.728	.048	.817	1.194		6.040	.871	.810	2.356	
29	1.443	.161	.612	1.533		6.413	2.000	1.090	2.564	
30	1.593	.028	.457	1.216		5.724	3.000	1.057	2.099	
31	1.566	.029	.466	1.271		5.628	3.000	1.115	2.858	
32	1.418	.178	.689	1.215	.036	6.710	1.098	1.063	2.824	1.119
33	e. 1.863	(g)	.517	1.146		e. 3.451	(g)	.422	2.542	
34	e. 1.003	(g)	.578	1.000		e. 2.578	(g)	.461	3.020	
35	1.900		.450	1.049		4.608		.682	3.054	
36	1.853	.037	.325	1.191		3.312	4.063	.526	2.828	
37	1.761	.117	.323	1.213		4.289	1.809	.826	2.263	
38	f. 1.701	.156	.418	1.354		f. 3.945	8.544	.494	1.825	
39	1.897		.233	.950	.013	3.384		.702	2.668	2.433
40	2.212		.536	1.083		3.799		1.022	4.844	
41	2.447		.587	.809	d. 650	1.866		■	4.268	d. 3.500
42	2.673		.000	.924	d. 425	1.550		.750	5.410	d. 3.398
43	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)
44	e. 2.426	(e)	.400	1.018		e. 1.659	(e)	.461	2.021	
45	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)
46	1.673	.030	.561	.108	d. 1.336	2.473	a. 038	1.083	5.003	d. 3.786
47	2.143		.408	1.092	d. 406	2.608		■	3.920	d. 3.500
48	1.537	.231	.068	1.242	.218	4.400	3.000	.601	3.136	1.792
49	1.568	.171	.576	1.091	.375	2.710	2.500	1.009	3.360	2.240
50	1.509	.156	.400	1.110		3.387	2.146	1.062	4.012	
51	1.592	.290	.335	1.178		4.102	2.355	1.326	4.767	
52	1.162	.412	.688	1.154		5.807	2.410	.870	2.887	
53	1.006	.615	.537	1.109	.012	5.024	3.819	.740	2.707	1.121
54	■	.493	.678	.302	d. 1.086	5.654	1.572	.850	4.480	d. 3.000
55	e. 1.840	(e)	.718	1.392		e. 4.384	(e)	.942	1.941	
56	1.930	.217	.774	1.509		3.748	1.830	.758	2.341	
57	1.685		.754	.893		5.751		1.103	2.523	
58	.810	.828	.825	.892		5.968	3.000	1.000	2.184	
59	1.165	.498	.639	1.233	d. 003	■	3.250	.821	3.080	d. 3.473

a Oyster shells.

b Charcoal.

c Represents the cost of wood entering into the charcoal. The labor cost of converting the wood into charcoal is inseparably combined with furnace labor.

d Anthracite coal.

e The quantity and cost of cinder, scrap, etc., are inseparably combined with quantity and cost of ore.

f Includ. m. manganese.

g Not reported.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

V.—PRODUCTION OF MATERIALS CHARGED INTO THE FURNACE.—Concluded.

Establishments numbered 1 to 33 are in the northern district of the United States; numbers 34 to 63 are in the southern district of the United States; numbers 64 to 115 are on the continent of Europe and numbers 116 to 133 are in Great Britain.

Amount of materials charged per ton of product.					Cost of materials per ton.				
No.	Product, etc.	Unit.	Coke.	Coal.	Ore.	Clinder, scrap, etc.	Lime-stone.	Coke.	Coal.
1	1000	1000	1.136	0.013	31.568	31.578	30.314	33.530	31.961
2	1000	1000	1.016	0.013	3.098	4.458	527	2.238	
3	1000	1000	1.263	0.012	1.263		771	2.870	2.436
4	1000	1000	1.071	0.012	1.071		775	2.619	2.430
5	1000	1000	537		537	1.507		4.614	
6	1000	1000	2.318		2.318	1.300	896	1.638	
7	1000	1000	0.911		4.494		662	2.782	2.406
8	1000	1000	1.071		4.992	2.601	1.000	3.015	
9	1000	1000	0.904		4.900	2.250	800		1.515
10	1000	1000	1.343		4.772	3.250	750	3.471	
11	1000	1000	0.936		3.459		790	3.020	1.738
12	1000	1000	1.316		4.300		0.000	2.840	
13	1000	1000	1.316		5.535	2.948	838	1.553	
14	1000	1000	1.316		4.298	2.100	1.130	4.379	2.914
15	1000	1000	1.316		4.768		0.000	4.700	3.578
16	1000	1000	1.316		5.213	2.750	872	2.979	
17	1000	1000	1.316		4.615	2.591	814	2.740	
18	1000	1000	1.118	0.009	5.881	3.250	750	3.478	1.980
19	1000	1000	1.118	0.007	3.942	1.751	501	3.796	2.849
20	1000	1000	1.118	0.003	3.267	2.000	900	3.836	2.850
21	1000	1000	1.118		2.638		340	3.156	
22	1000	1000	1.118		4.044	2.092	1.210	1.322	
23	1000	1000	1.118		3.782	3.029	800	1.064	
24	1000	1000	1.118		4.735	2.750	778	1.197	
25	1000	1000	1.118	0.003	3.127	2.212	681	3.222	2.850
26	1000	1000	1.118	0.001	1.709	2.000	850	3.540	3.050
27	1000	1000	1.118		3.876	3.101	890	2.770	
28	1000	1000	1.118		3.128	3.250	898	3.089	
29	1000	1000	1.118		2.586	1.742	400	3.640	
30	1000	1000	1.118		5.218		795	2.527	
31	1000	1000	1.118		4.178	1.789	0.000	4.827	
32	1000	1000	1.118		6.677	0.685	915	2.843	
33	1000	1000	1.118		3.118		651	2.916	
34	1000	1000	1.118		1.441		670	4.364	
35	1000	1000	1.118		1.570		605	3.068	
36	1000	1000	1.118		1.327	1.900	608	2.622	
37	1000	1000	1.118		1.194	1.096	320	3.360	
38	1000	1000	1.118		1.472		610	3.711	
39	1000	1000	1.118		1.827		990	3.920	
40	1000	1000	1.118		1.685		650	2.800	
41	1000	1000	1.118		0.855		623	2.573	
42	1000	1000	1.118		2.666	750	633	2.878	
43	1000	1000	1.118		1.567		393	2.781	
44	1000	1000	1.118		1.840	1.072	756	3.953	
45	1000	1000	1.118		2.014		737	3.100	
46	1000	1000	1.118		1.320		843	2.490	1.500
47	1000	1000	1.118		2.063	1.203	670	3.640	
48	1000	1000	1.118		2.104		736	3.361	
49	1000	1000	1.118		1.646		736	2.544	
50	1000	1000	1.118		3.050		728	3.021	
51	1000	1000	1.118		1.839		810	4.101	
52	1000	1000	1.118		1.772		748	2.797	
53	1000	1000	1.118		2.616		700	2.822	
54	1000	1000	1.118		2.250		750	2.562	
55	1000	1000	1.118		1.867		780	2.074	
56	1000	1000	1.118	0.003	2.204	2.076	383	1.919	1.537
57	1000	1000	1.118	(c)	61.784	(b)	973	4.054	(c)
58	1000	1000	1.118	(c)	308	(c)		4.615	(c)
59	1000	1000	1.118	(c)	308	(c)		4.615	(c)

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

G.—GENERAL STATEMENT OF COST FOR THE PERIOD.

[Establishments numbers 1 to 7, 9 to 22, 41, 42, 46 to 50, and 63 to 90 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 23 to 35, 40, 43 to 45, 50, 54, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 38, 61 to 62, and 116 are in Great Britain.—Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Materials.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
1	\$51,232	\$10,371	\$3,200	\$2,892	\$250	\$68,945
2	209,856	29,795	6,500	11,041	1,105	379,219
3	145,471	14,568	3,100	5,889	1,250	170,278
4	137,037	41,818	10,220	7,700	1,217	198,668
5	43,513	5,797	1,800	3,908	1,406	56,324
6	51,143	7,330	2,200	2,300	180	63,153
7	35,149	2,533	800	350	200	39,032
8	111,696	21,040	7,596	7,164	500	147,996
9	241,830	22,980	2,444	2,001	657	270,912
10	717,687	78,156	12,600	19,111	6,600	823,954
11	264,060	23,136	2,600	6,039	210	305,128
12	301,497	24,747	2,400	10,244	2,047	344,935
13	313,513	28,384	2,400	4,213	1,600	350,110
14	1,118,711	97,754	15,026	42,810	1,020	1,275,321
15	440,136	48,002	4,458	15,909	1,240	510,755
16	976,544	104,053	10,000	18,221	4,000	1,113,758
17	462,000	45,000	9,500	16,600	673	533,373
18	263,489	42,228	4,878	20,404	1,288	332,285
19	241,627	42,341	6,500	10,563	1,500	302,701
20	568,305	54,750	4,000	21,100	1,200	650,355
21	271,504	24,770	2,250	11,000	675	311,399
22	310,730	27,600	2,000	11,040	800	353,970
23	354,446	41,445	5,520	6,221	800	408,232
24	298,180	27,060	2,100	7,062	502	334,904
25	317,578	38,937	3,000	15,709	626	376,850
26	390,951	44,175	3,900	11,085	626	460,737
27	570,738	63,844	13,323	28,540	614	677,067
28	610,141	50,400	2,116	680,225	(b)	732,882
29	462,419	60,152	6,387	32,590	794	563,342
30	275,039	28,279	1,750	8,872	2,000	315,940
31	264,054	27,753	1,750	8,095	1,250	303,902
32	210,391	40,700	2,706	22,252	784	286,901
33	1,025,490	44,853	(d)	d44,715	(e)	f1,115,058
34	15,466	e670	(d)	d708	(e)	f16,932
35	1,046,982	78,001	1,284	g23,800	(g)	A1,150,247
36	292,741	19,047	747	13,447	360	326,342
37	408,547	27,385	878	20,324	827	457,559
38	317,323	23,236	4,910	17,652	540	363,771
39	591,225	64,661	3,420	13,347	1,976	674,629
40	15,172	767	65	52	31	16,087
41	93,417	17,161	3,850	2,522	200	117,150
42	315,144	56,272	7,000	18,342	686	397,444
43	(a)	(a)	(e)	(e)	(e)	(s)
44	9,987	e851	(d)	d672	(e)	f11,850
45	(e)	(e)	(e)	(e)	(e)	(s)
46	195,706	34,071	1,130	9,917	2,600	243,424
47	126,243	19,922	5,064	5,712	583	167,504
48	288,303	34,723	2,500	6,360	(i)	f331,977
49	197,026	29,757	2,025	6,108	622	236,538
50	344,110	40,002	4,256	5,209	1,148	394,725
51	220,123	42,459	3,000	4,914	1,840	271,336
52	502,147	51,585	2,700	38,628	1,531	596,591
53	618,974	75,086	6,300	18,546	740	719,646
54	837,364	29,810	6,386	14,796	500	898,256
55	233,993	32,023	3,286	12,954	900	283,156
56	166,951	17,994	6,462	7,107	628	199,042

a The labor cost of converting wood into charcoal is not included in materials, but is inseparably combined with furnace labor.

b The expenditures for taxes are inseparably combined with those for supplies and repairs. The cost of repairs for this establishment was unusually high during the period covered by this investigation.

c Furnace labor proper only.

d The expenditures for ordinary labor and officials and clerks are inseparably combined with those for supplies and repairs.

e Not reported.

f Not including taxes.

g The expenditures for taxes and insurance are inseparably combined with those for supplies and repairs.

h Including insurance.

i Taxes not paid by lease of furnace.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the transparency and accountability of the organization.

2. The second part outlines the specific procedures for recording transactions. It details the steps involved in capturing data, ensuring its accuracy, and storing it securely.

3. The third part addresses the challenges associated with record-keeping, such as data loss, corruption, and unauthorized access. It provides strategies to mitigate these risks and ensure the integrity of the records.

4. The fourth part discusses the role of technology in modern record-keeping. It highlights the benefits of digital storage and automated systems in improving efficiency and reducing errors.

5. The fifth part concludes by reiterating the importance of a robust record-keeping system for the long-term success and sustainability of the organization.

Date	Description	Amount	Category	Status	Remarks
2023-10-01	Initial deposit	1000.00	Revenue	Completed	First transaction of the month.
2023-10-05	Payment received	250.00	Revenue	Completed	Payment from client X.
2023-10-10	Expense incurred	75.00	Operating Costs	Pending	Office supplies purchase.
2023-10-15	Transfer to savings	50.00	Internal Transfer	Completed	Monthly savings transfer.
2023-10-20	Interest received	12.50	Interest Income	Completed	Interest on bank deposit.
2023-10-25	Payment received	300.00	Revenue	Completed	Payment from client Y.
2023-10-30	Expense incurred	125.00	Operating Costs	Pending	Monthly rent payment.
2023-10-31	Final balance	1452.50	Revenue	Completed	End of month summary.

The above table provides a detailed overview of the financial transactions for the month of October 2023. It ensures that all entries are properly recorded and categorized for accurate financial reporting.

The total revenue for the month is 1652.50, while the total operating costs are 200.00. The final balance at the end of the month is 1452.50.

This document serves as a comprehensive record of all financial activities, ensuring transparency and accountability in the organization's financial management.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

II.—ELEMENTS OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 7, 9 to 82, 41, 42, 46 to 59, and 65 to 90 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 33 to 35, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.—Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Materials.						Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total of all cost.
	Ore.	Cinder, scrap, etc.	Limestone.	Coke.	Coal.	Total.					
1	\$10.321	.....	a \$0.100	.....	b \$7.307	c \$17.728	\$3.589	\$0.761	\$1.001	\$0.086	\$23.165
2	4.007	.....	.173	.....	d 9.043	13.223	1.194	.261	.480	.044	15.202
3	6.931	.....	.152	.....	d 5.267	12.350	1.237	.263	.500	.106	14.456
4	5.303	.....	.165	.....	d 4.722	10.190	3.094	.756	.570	.090	14.700
5	5.228	.....	.283	.....	d 9.000	14.511	1.932	.533	1.333	.467	18.776
6	8.538	.....	.330	.....	d 11.589	20.457	2.932	.880	.920	.060	25.249
7	9.962	.....	.625	.....	d 11.631	22.218	1.601	.506	.221	.127	24.673
8	1.981	.....	.235	.....	d 5.541	7.757	1.461	.528	.498	.035	10.279
9	7.795	\$0.322	.425	\$4.451	.....	12.993	1.234	.181	.161	.035	14.554
10	8.245	.007	.460	5.163	.....	13.035	1.618	.233	.371	.116	16.178
11	8.556	.177	.282	3.067	.448	12.530	1.575	.124	.240	.010	14.479
12	8.404	.697	.322	2.568	.....	11.991	.975	.134	.403	.081	13.584
13	8.919	.136	.407	3.214	.....	12.676	1.147	.097	.170	.061	14.151
14	9.412	.....	.834	3.424	.....	13.220	1.155	.178	.500	.023	15.076
15	8.984	.336	.623	3.358	.085	13.386	1.490	.136	.484	.039	15.535
16	9.412	.052	.346	3.589	.....	13.399	1.440	.137	.250	.055	15.281
17	11.260	.....	.406	3.700	.100	15.400	1.500	.817	.550	.019	17.786
18	9.662	.332	.627	3.515	.....	14.136	1.642	.190	.793	.060	16.811
19	9.777	.071	.431	2.944	.161	13.424	1.665	.250	.416	.060	15.823
20	9.009	.....	.491	1.750	e 1.725	12.975	1.250	.091	.500	.028	14.844
21	10.337	.....	.430	1.891	.....	12.658	1.155	.151	.513	.041	14.518
22	10.010	.....	.545	2.175	e 1.750	14.480	1.250	.091	.500	.027	16.848
23	8.709	.....	.243	2.384	.827	11.663	1.364	.182	.208	.016	13.433
24	8.946	.....	.242	2.985	.154	12.327	1.156	.087	.318	.021	13.909
25	8.388	.....	.244	2.837	.236	11.705	1.435	.144	.579	.019	12.882
26	9.059	.....	.251	3.118	.260	12.708	1.403	.124	.466	.017	14.718
27	9.274	.....	.373	4.035	.026	13.708	1.534	.820	.926	.015	16.503
28	10.436	.018	.662	2.814	.....	13.930	1.151	.048	f 1.875	(j)	16.504
29	9.253	.321	.668	3.959	.....	14.201	1.831	.195	.992	.024	17.243
30	9.129	.085	.483	3.280	.....	12.977	1.334	.083	.418	.094	14.906
31	8.803	.086	.519	3.626	.....	13.034	1.370	.086	.429	.062	14.981
32	8.165	.353	.605	3.431	.040	12.594	1.897	.110	.903	.032	15.536
33	g 6.427	(g)	.218	2.914	.....	9.559	h. 418	(i)	i. 417	(j)	k 10.394
34	g 6.807	(g)	.260	3.183	.....	10.256	h. 444	(i)	i. 528	(j)	k 11.228
35	8.756	.....	.265	3.207	.....	12.228	.912	.015	l. 279	(l)	m 13.434
36	6.138	.149	.171	2.772	.....	9.230	.601	.024	.424	.011	10.290
37	5.791	.220	.170	2.772	.....	8.953	.603	.015	.580	.012	10.163
38	n 6.063	.560	.206	2.479	.....	9.308	.743	.144	.518	.016	10.729
39	6.387	.....	.264	2.555	.030	9.236	.710	.054	.212	.032	10.244
40	8.403	.....	.568	5.248	.....	14.219	.719	.069	.049	.029	15.075
41	4.615	.....	.469	3.900	e 2.276	11.260	2.069	.464	.304	.024	14.121
42	3.680	.....	.517	4.997	e 1.529	10.723	1.983	.238	.624	.023	13.591
43	g 3.630	(g)	.184	2.971	.....	6.785	h. 470	(i)	i. 481	(j)	k 7.736
44	g 4.024	(g)	.185	2.973	.....	7.182	h. 467	(i)	i. 483	(j)	k 8.132
45	g 4.611	(g)	.184	2.971	.....	7.766	h. 470	(i)	i. 481	(j)	k 8.717
46	5.808	.239	.609	.551	e 5.060	12.267	2.135	.071	.622	.163	15.258
47	5.759	.....	.408	4.285	e 1.428	11.880	1.738	.443	.498	.049	14.607
48	6.808	.664	.401	3.895	.391	12.159	1.464	.106	.268	(o)	k 13.996

a Oyster shells.

b Represents the cost of wood entering into the charcoal. The labor cost of converting the wood into charcoal is inseparably combined with furnace labor.

c The labor cost of converting wood into charcoal is inseparably combined with furnace labor.

d Charcoal.

e Anthracite coal.

f The expenditures for taxes are inseparably combined with those for supplies and repairs. The cost of repairs for this establishment was unusually high during the period covered by this investigation.

g The expenditures for cinder, scrap, etc., are inseparably combined with those for ore.

h Furnace labor proper only.

i The expenditures for ordinary labor and officials and clerks are inseparably combined with those for supplies and repairs.

j Not reported.

k Not including taxes.

l The expenditures for taxes and insurance are inseparably combined with those for supplies and repairs.

m Including insurance.

n Including manganese.

o Taxes not paid by lessee of furnace.

8. 2000年12月15日，在“2000年中国最佳企业公民”评选中，蒙牛乳业（集团）有限公司名列第10位。

1. The first step in the process of the investigation is the identification of the problem. This is done by the investigator who is assigned to the case. The investigator will then gather information about the problem and the people involved. This information will be used to develop a plan of action. The plan of action will be based on the information gathered and the investigator's own experience. The plan of action will be used to guide the investigation and to ensure that the problem is solved. The investigator will then implement the plan of action and will monitor the progress of the investigation. The investigator will then report the results of the investigation to the appropriate authorities. The results of the investigation will be used to develop a plan of action to prevent the problem from occurring again. The investigator will then implement the plan of action and will monitor the progress of the investigation. The investigator will then report the results of the investigation to the appropriate authorities. The results of the investigation will be used to develop a plan of action to prevent the problem from occurring again.

[illegible]

4. Antennae - long, 11-segmented, with 1st segment largest, 2nd segment largest, 3rd segment largest, 4th segment largest, 5th segment largest, 6th segment largest, 7th segment largest, 8th segment largest, 9th segment largest, 10th segment largest, 11th segment largest.

I.—COST OF PRODUCTION OF **PIG IRON** AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

II.—ELEMENTS OF COST IN ONE TON OF 2,240 POUNDS—Concluded.

[Establishments numbers 1 to 7, 9 to 32, 41, 42, 46 to 59, and 65 to 90 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 33 to 35, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.—Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Materials.						Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total of all cost.
	Ore.	Cinder, scrap, etc.	Limestone.	Coke.	Coal.	Total.					
110	\$3.417	.....	\$0.483	\$4.264	.....	\$8.164	\$0.595	\$0.170	\$0.593	\$0.101	\$9.623
111	4.215	.....	.961	5.397	.....	10.573	1.484	.172	.614	.070	12.913
112	4.694	.....	.704	3.016	.....	8.414	1.389	.150	.501	.028	10.482
113	5.066	.....	.758	3.986	.....	9.810	1.008	.258	.499	.017	11.592
114	4.093	.....	.771	4.498	.....	9.362	1.311	.435	.675	.042	11.825
115	4.595	\$2.017	.386	2.880	\$0.007	9.885	1.414	.244	.488	.039	\$12.070
116	b3.690	(b)	.535	5.281	.033	9.529	.769	.067	.496	.033	10.893
117	c5.441	(c)	c.854	d2.766	(d)	9.061	.711	(e)	e1.335	(e)	f11.107
118	1.771	.....	.....	5.556	.....	7.327	.755	.221	.359	.108	8.765

a From this amount should be deducted \$1.042, the value of lead, zinc, and other incidental products per ton of iron produced, leaving the total net cost \$11.078.

b The expenditures for cinder, scrap, etc., are inseparably combined with those for ore.

c The expenditures for cinder, scrap, etc., are inseparably combined with those for ore and limestone.

d The expenditures for coal are inseparably combined with those for coke.

e The expenditures for officials and clerks and taxes are inseparably combined with those for supplies and repairs.

f From this amount should be deducted \$0.619, the value of lead and zinc per ton of iron produced, leaving the total net cost \$10.488.

TABLE 1.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

J.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUND

(Establishments numbers 1 to 7, 9 to 22, 41, 42, 46 to 50, and 65 to 90 are in the northern district of the United States; numbers 8 and 91 to 114 are in the southern district of the United States; numbers 23 to 25, 46, 47 to 49, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.—This table is based on the preceding table, and to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader referred to that table for such information as they furnish.)

Establishment number.	Materials.						Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total of all cost.
	Orn.	Clender, scrap, etc.	Limestone.	Coke.	Coal.	Total.					
1	44.56		.42		31.54	76.53	15.49	2.29	4.22	.37	100
2	28.36		1.14		50.49	80.03	7.85	1.72	3.18	.29	100
3	47.95		1.05		36.43	85.43	8.56	1.82	3.46	.78	100
4	36.06		1.12		32.12	69.32	21.05	5.14	2.88	.61	100
5	27.84		1.51		47.33	77.28	10.29	2.44	7.10	2.49	100
6	33.81		1.31		45.88	81.02	11.61	2.43	3.44	.24	100
7	40.38		2.53		47.14	90.05	6.49	2.05	.90	.51	100
8	10.27		2.29		53.91	75.47	14.21	5.14	4.04	.34	100
9	53.54	2.21	2.92	30.38		86.27	8.48	.90	1.11	.54	100
10	50.90	.42	2.84	31.93		84.16	9.39	1.44	2.29	.72	100
11	59.09	1.23	1.05	21.18	3.00	84.53	10.06	.08	.08	.07	100
12	61.67	5.13	2.37	18.90		88.27	7.18	.80	2.97	.50	100
13	63.03	.06	2.68	22.71		88.56	8.10	.00	1.39	.43	100
14	62.43		2.45	22.71		87.60	7.06	1.18	2.32	.16	100
15	67.79	2.10	4.01	21.62	.55	96.17	9.80	.97	3.12	.25	100
16	61.56	.34	2.28	22.49		87.63	8.43	.90	1.64	.86	100
17	62.97		2.25	20.80	.50	86.68	6.44	1.70	2.00	.11	100
18	67.47	1.97	3.73	20.91		84.08	9.77	1.13	4.72	.30	100
19	61.79	.45	2.72	18.86	1.03	84.84	10.52	1.64	2.63	.37	100
20	60.68		3.31	11.79	11.62	87.41	8.42	.61	3.87	.19	100
21	71.20		2.98	13.03		87.19	7.96	1.04	3.53	.28	100
22	61.23		3.33	12.80	10.70	88.54	7.65	.50		.17	100
23	64.63		1.61	17.75	2.43	86.82	10.15	1.38	1.35	.12	100
24	64.32		1.74	21.44	1.11	88.62	8.31	.62	2.28	.15	100
25	68.42		1.76	20.43	1.70	84.31	10.34	1.64	4.17	.14	100
26	61.55		1.71	21.18	1.80	86.34	8.53	.84	2.17	.12	100
27	56.19		2.26	24.45	.18	83.06	9.30	1.94	3.61	.00	100
28	63.23	.11	4.01	17.03		84.40	6.86	.29	3.33		100
29	53.06	1.68	2.93	22.96		82.36	10.82	1.13	5.75	.14	100
30	61.24	.57	3.24	22.01		87.06	6.85	.56	2.80	.63	100
31	58.76	.58	3.48	24.20		87.09	9.15	.58	2.86	.61	100
32	52.56	2.27	3.89	23.04	.20	81.06	12.21	.71	3.81	.21	100
33	61.83		2.10	28.04		91.97	4.03		4.61		100
34	60.63		2.37	23.35		91.35	3.95		4.70		100
35	65.18		1.97	33.67		91.62	6.79	.11	2.08		100
36	53.65	1.45	1.66			68.70	5.64	.23	4.12	.11	100
37	54.80	2.16	1.67	27.38		68.09	5.93	.15	3.71	.12	100
38	56.51	3.22	1.92	23.11		68.78	6.92	1.34	4.70	.15	100
39	62.25		2.58	34.94	.29	90.16	6.83	.33	2.07	.31	100
40	55.74		3.77	34.61		94.33	4.77	.30	.33	.19	100
41	32.08		3.32	27.62	16.12	78.74	14.65	3.29	2.15	.17	100
42	27.08		1.80	30.77	11.25	79.90	14.50	1.75	4.50	.17	100
43	46.72		2.38	38.49		87.70	6.08		4.22		100
44	49.48		2.28	36.96		84.33	5.74		3.94		100
45	62.90		3.11	34.08		99.09	5.30		5.52		100
46	33.07	1.57	1.90	3.61	32.16	80.40	13.90	.66		1.07	100
47	29.43		2.79	29.33	8.79	61.33	11.90	3.63	3.91	.33	100
48	44.64	4.74	2.67	17.62	2.79	66.87	10.46	.79	1.91		100
49	43.00	3.22	4.33	27.37	4.63	83.45	12.61	1.11	2.61	.22	100
50	44.49	2.45	3.49	36.35		87.18	16.13	1.06	1.32	.29	100
51	42.33	4.47	2.92	36.35		86.37	11.14	.79	1.39	.41	100
52	49.61	7.00	4.58	23.32		86.51	7.33	.39	3.34	.22	100
53	41.90	12.78	3.29	23.13	.11	86.25	10.46	.60	2.31	.16	100
54	32.12	4.57	2.68	7.90	19.22	68.79	7.67	2.62	3.00	.13	100
55	56.37		5.27	21.05		82.64	11.31	1.16	4.57	.32	100
56	51.65	2.84	4.17	24.25		82.98	9.04	2.28	3.57	.28	100
57	44.74		3.90	13.90		68.63	9.04	.43	3.64	.30	100
58	38.50	19.25	3.20	15.19		66.77	12.81	1.55	3.74	.18	100
59	38.00	10.00	3.66	36.46	2.21	78.63	15.25	.90	4.74	.18	100
60	38.79	8.25	3.44	44.36		91.85	4.60	.19	2.50	.14	100
61	38.48	2.97	2.96	39.42	.30	84.07	8.05	.73	7.32	.16	100
62	38.59		4.71	27.97	.37	87.68	8.00	.68	2.50	.38	100
63	38.59		5.17	37.97	.90	97.17	9.04	.69	2.70	.38	100
64	38.59		6.12	62.00		84.65	7.63	2.35	3.65	1.10	100
65	38.59		8.00		38.79	84.54	8.46	2.34	2.43	.15	100
66	38.59		2.97	88.90	.29	88.84	8.10	1.61	2.18		100

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

J.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUNDS—Concluded.

[Establishments numbers 1 to 7, 9 to 32, 41, 42, 46 to 59, and 65 to 90 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 23 to 25, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.—This table is based on the preceding table, and to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader referred to that table for such information as they furnish.]

Establishment number.	Materials.						Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total of all cost.
	Ore.	Cinder, scrap, etc.	Limestone.	Coke.	Coal.	Total.					
67	50.40	7.58	3.41	25.44	.....	86.83	9.58	1.00	2.26	.33	100
68	55.06	1.36	1.90	26.35	1.01	85.68	10.95	.75	2.32	.....	100
69	46.76	3.24	2.76	31.54	.....	84.30	10.87	1.42	3.37	.04	100
70	49.99	.....	2.00	30.18	.72	82.89	11.04	1.78	3.73	.56	100
71	54.87	.....	3.15	24.25	.....	82.27	10.02	.64	6.94	.13	100
72	54.36	10.71	6.28	15.98	.....	87.33	9.43	1.25	1.78	.21	100
73	47.78	3.43	6.19	10.78	19.61	87.79	9.69	1.66	.07	.19	100
74	48.12	.....	4.22	14.02	17.79	84.15	8.35	3.04	4.03	.48	100
75	46.04	9.29	3.51	27.36	.....	86.20	11.29	.62	1.70	.19	100
76	46.24	8.11	3.11	26.03	.....	83.49	11.30	1.28	3.73	.20	100
77	47.49	9.18	2.72	24.59	2.60	86.58	9.17	1.56	2.40	.29	100
78	31.81	11.45	3.36	7.13	26.51	79.76	11.57	2.59	5.64	.24	100
79	42.45	4.23	5.90	18.95	10.41	81.94	9.79	1.52	6.54	.21	100
80	46.88	.....	5.09	32.36	.....	84.33	11.16	1.17	3.03	.31	100
81	45.06	9.74	8.62	17.23	.....	80.65	12.81	3.33	2.88	.33	100
82	36.61	12.34	9.83	17.09	.....	75.87	17.89	3.01	2.57	.66	100
83	47.31	10.42	7.10	14.64	.....	79.47	14.67	1.44	3.67	.75	100
84	42.09	4.89	5.97	20.60	9.57	83.12	10.32	1.75	4.57	.24	100
85	35.88	4.19	8.96	1.18	31.27	81.48	12.67	2.64	2.35	.86	100
86	49.00	6.14	3.11	23.50	.....	81.75	13.85	.71	3.44	.25	100
87	53.73	4.02	3.80	21.71	.....	86.26	9.27	.59	3.82	.06	100
88	44.51	1.25	4.88	20.40	.....	80.04	14.35	1.52	3.94	.15	100
89	50.02	.....	1.72	20.78	.....	81.52	11.08	.72	6.52	.16	100
90	43.80	2.43	2.35	34.81	.....	83.39	10.93	.87	4.62	.69	100
91	16.20	.07	4.24	53.95	.....	74.46	18.85	.58	5.76	.35	100
92	21.09	.....	4.65	44.41	.....	70.15	25.40	1.91	1.70	.84	100
93	28.23	.....	4.50	46.77	.....	79.50	13.47	4.51	2.33	.19	100
94	29.53	.....	3.23	40.67	.....	73.43	17.37	1.53	7.40	.27	100
95	22.60	.86	5.48	39.91	.....	68.85	13.93	3.87	12.64	.71	100
96	26.18	1.00	4.02	45.25	.....	76.45	18.57	1.80	2.87	.31	100
97	27.80	.....	2.90	46.64	.....	77.34	17.24	1.33	3.80	.29	100
98	32.87	.....	5.87	45.14	.....	83.88	14.10	1.19	.70	.13	100
99	28.45	.....	3.10	44.88	.....	76.43	20.25	.65	2.46	.21	100
100	21.40	.....	3.54	46.32	.....	71.26	18.46	1.70	7.67	.41	100
101	18.69	.09	3.69	47.44	.....	69.91	19.68	1.97	3.28	.16	100
102	39.42	.....	2.12	40.49	.....	82.03	11.25	2.62	3.74	.36	100
103	32.68	1.18	5.02	44.78	.....	83.66	12.19	1.17	2.76	.22	100
104	40.29	.....	7.26	33.13	.....	80.67	14.33	2.28	2.20	.52	100
105	39.75	.....	2.36	38.96	2.89	83.96	13.33	.90	1.45	.36	100
106	36.80	1.32	5.12	41.96	.....	85.20	12.31	1.11	1.16	.23	100
107	34.39	.....	4.08	40.85	.....	79.32	11.35	.85	3.17	.31	100
108	49.65	.....	.....	38.68	.....	88.33	7.82	.49	2.89	.47	100
109	39.79	.....	6.53	32.42	.....	78.74	11.90	1.25	7.98	.13	100
110	35.51	.....	5.02	44.31	.....	84.84	6.18	1.77	6.16	1.05	100
111	32.64	.....	7.44	41.80	.....	81.88	11.49	1.33	4.76	.54	100
112	44.78	.....	6.72	28.77	.....	80.27	13.25	1.43	4.78	.27	100
113	43.70	.....	6.54	34.39	.....	84.63	8.60	2.23	4.30	.15	100
114	34.61	.....	6.62	33.04	.....	79.17	11.09	3.68	5.71	.35	100
115	33.07	16.71	3.20	23.86	.06	81.90	11.72	2.02	4.04	.32	100
116	33.78	.....	4.61	48.48	.30	87.47	7.06	.62	4.55	.30	100
117	48.99	.....	7.69	24.90	.....	81.58	6.40	.....	12.02	.....	100
118	20.21	.....	.....	63.39	.....	83.60	8.61	2.52	4.09	1.18	100

TABLE I.—COST OF PRODUCTION OF **PIG IRON** AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.**K.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS.**

[Establishments numbers 1 to 7, 9 to 32, 41, 42, 46 to 59, and 63 to 90 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 33 to 35, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.]

Establishment number.	Additional cost.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1.....	\$300	\$1,400	\$1,500	\$3,200
2.....	2,164	773	284	3,221
3.....	775	.....	.....	775
4.....	865	.....	.....	865
5.....	300	.....	570	870
6.....	350	.....	950	1,300
7.....	100	475	.....	575
8.....	850	1,001	.....	1,851
9.....	547	5,428	.....	5,975
10.....	1,000	18,000	15,289	34,289
11.....	.....	.....	.....	.....
12.....	.....	.....	.....	.....
13.....	.....	.....	2,227	2,227
14.....	500	.....	.....	500
15.....	.....	.....	.....	.....
16.....	1,200	.....	30,000	31,200
17.....	375	a 18,500	.....	18,875
18.....	.....	.....	.....	.....
19.....	.....	.....	19,087	19,087
20.....	400	.....	.....	400
21.....	.....	4,500	4,000	8,500
22.....	200	.....	.....	200
23.....	319	4,200	.....	4,519
24.....	350	1,954	.....	2,304
25.....	474	b 13,566	.....	14,040
26.....	474	b 15,737	.....	16,211
27.....	906	.....	.....	906
28.....	(c)	(c)	17,520	d 17,520
29.....	.....	.....	.....	.....
30.....	.....	.....	.....	.....
31.....	198	.....	.....	198
32.....	.....	.....	.....	.....
33.....	.....	.....	.....	.....
34.....	(c)	(c)	(c)	(c)
35.....	.....	.....	.....	.....
36.....	.....	.....	.....	.....
37.....	.....	.....	.....	.....
38.....	.....	.....	.....	.....
39.....	89	14,547	.....	14,636
40.....	5	.....	78	83
41.....	500	6,222	2,074	8,796
42.....	382	18,321	11,756	30,459
43.....	(c)	(c)	(c)	(c)
44.....	(c)	(c)	(c)	(c)
45.....	(c)	(c)	(c)	(c)
46.....	.....	.....	.....	.....
47.....	137	5,963	.....	6,100
48.....	(e)	b 5,500	.....	f 5,500
49.....	113	.....	.....	113
50.....	953	9,452	.....	10,405
51.....	1,200	g 18,640	.....	19,840
52.....	420	.....	2,625	3,045
53.....	525	.....	.....	525
54.....	250	9,000	.....	9,250
55.....	325	6,000	3,000	9,325
56.....	485	7,167	.....	7,652
57.....	(e)	40	65	d 105
58.....	.....	4,500	4,000	8,500
59.....	203	.....	.....	203
60.....	103	4,002	.....	4,105
61.....	.....	.....	.....	.....
62.....	31	5,056	.....	5,087
63.....	11	1,845	.....	1,856

a Of this amount \$15,000 is rental of furnace.

b Rental of furnace.

- Not reported.

f Not including insurance and interest.

e Insurance not paid by lessee of furnace.

f Not including insurance.

g Of this amount \$12,434 is rental.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

K.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS—Concluded.

[Establishments numbers 1 to 7, 9 to 32, 41, 42, 46 to 59, and 62 to 90 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 23 to 25, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.]

Establishment number.	Additional cost.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
64.....	\$6	.....	\$57	\$63
65.....	120	.....	.....	120
66.....	369	\$10, 293	.....	10, 662
67.....	.....	.....	.....	.....
68.....	(a)	b 2, 808	.....	c 2, 808
69.....	.....	.....	.....	.....
70.....	250	.....	.....	250
71.....	566	.....	.....	566
72.....	.....	.....	.....	.....
73.....	113	d 7, 413	.....	7, 526
74.....	200	13, 093	.....	13, 293
75.....	250	.....	.....	250
76.....	507	2, 004	.....	3, 411
77.....	496	.....	.....	496
78.....	10	.....	.....	10
79.....	25	625	.....	650
80.....	8	.....	.....	8
81.....	322	(e)	.....	f 322
82.....	250	(e)	.....	f 250
83.....	.....	(e)	.....	(e)
84.....	33	2, 500	.....	2, 533
85.....	85	.....	.....	85
86.....	265	3, 260	.....	3, 525
87.....	67	.....	.....	67
88.....	.....	11, 500	20, 000	31, 500
89.....	240	11, 997	.....	12, 237
90.....	.....	.....	.....	.....
91.....	.....	.....	.....	.....
92.....	.....	8, 759	13, 139	21, 898
93.....	.....	.....	.....	.....
94.....	450	29, 000	8, 789	38, 239
95.....	.....	7, 200	.....	7, 200
96.....	.....	11, 000	1, 000	12, 000
97.....	75	233	.....	308
98.....	.....	.....	.....	.....
99.....	.....	.....	.....	.....
100.....	275	.....	.....	275
101.....	454	.....	.....	454
102.....	11	759	.....	770
103.....	83	2, 000	.....	2, 083
104.....	25	90	.....	115
105.....	.....	.....	.....	.....
106.....	10	167	.....	177
107.....	.....	(e)	(e)	(e)
108.....	2, 445	2, 700	.....	5, 145
109.....	.....	.....	.....	.....
110.....	.....	.....	.....	.....
111.....	.....	.....	.....	.....
112.....	.....	.....	19, 974	19, 974
113.....	.....	.....	.....	.....
114.....	.....	(e)	.....	(e)
115.....	.....	.....	19, 846	19, 846
116.....	54	.....	.....	54
117.....	.....	.....	(e)	(e)
118.....	9	.....	80	89

a Insurance not paid by lessee of furnace.

b Rental of furnace.

c Not including insurance.

d Of this amount \$3,681 is rental of furnace.

e Not reported.

f Not including interest.

TABLE K.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

L.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 7, 9 to 32, 41, 42, 46 to 53, and 55 to 80 are in the northern district of the United States; numbers 8 and 91 to 114 are in the southern district of the United States; numbers 33 to 35, 40, 43 to 45, 50, 64, 115, 117, and 118 are on the continent of Europe; and numbers 26 to 30, 61 to 63, and 116 are in Great Britain.]

Establishment number.	Additional cost per ton.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1	\$0.104	\$0.484	\$0.510	\$1.107
2	.087	.031	.011	.129
3	.066			.066
4	.064			.064
5	.100		.100	.200
6	.149		.280	.529
7	.083	.300		.383
8	.039	.070		.129
9	.029	.292		.321
10	.019	.350	.297	.666
11				
12				
13			.000	.000
14	.006			.006
15				
16	.016		.412	.428
17	.012	c .617		.629
18				
19			.750	.750
20	.009			.009
21		.210	.186	.396
22	.009			.009
23	.011	.139		.149
24	.014	.061		.065
25	.017	b .500		.517
26	.015	b .500		.515
27	.022			.022
28	(c)	(c)	.400	d .400
29				
30				
31	.010			.010
32				
33				
34	(c)	(c)	(c)	(c)
35				
36				
37				
38				
39	.001	.231		.232
40	.005		.073	.078
41	.060	.750	.250	1.060
42	.013	.023		1.036
43	(c)	(c)	(c)	(c)
44	(c)	(c)	(c)	(c)
45	(c)	(c)	(c)	(c)
46				
47	.012	.520		.532
48	(d)	b .222		f .233
49				.006
50	.029	.222		.251
51	.048	a .750		.798
52	.008			.018
53	.009			.009
54	.011	.292		.303
55	.015	.372	.130	.517
56	.034	.500		.534
57	(e)	.205	.288	f .523
58		.401	.356	.757
	.013			.013
	.002	.050		.052
	.009	.231		.239
	.001	.231		.232
	.005		.045	.050

a Is rental of furnace.

d Not including insurance and interest.
e Insurance not paid by lessee of furnace.
f Not including insurance.

TABLE I.—COST OF PRODUCTION OF PIG IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Concluded.**L.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS—Concluded.**

[Establishments numbers 1 to 7, 9 to 32, 41, 42, 46 to 59, and 65 to 90 are in the northern district of the United States; numbers 8, and 91 to 114 are in the southern district of the United States; numbers 33 to 35, 40, 43 to 45, 60, 64, 115, 117, and 118 are on the continent of Europe; and numbers 36 to 39, 61 to 63, and 116 are in Great Britain.]

Establishment number.	Additional cost per ton.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
65.....	\$0.014			\$0.014
66.....	.009	\$0.258		.267
67.....				
68.....	(a)	b .250		c .250
69.....				
70.....	.016			.016
71.....	.010			.010
72.....				
73.....	.008	d .503		.511
74.....	.006	.400		.406
75.....	.007			.007
76.....	.016	.089		.105
77.....	.019			.019
78.....	.010			.010
79.....	.013	.385		.400
80.....	.003			.003
81.....	.018	(e)		f .018
82.....	.107	(e)		f .107
83.....		(e)		(e)
84.....	.006	.425		.431
85.....	.061			.061
86.....	.015	.184		.199
87.....	.007			.007
88.....		.471	\$0.820	1.291
89.....	.007	.822		.329
90.....				
91.....				
92.....		.250	.375	.625
93.....				
94.....	.013	.625	.250	1.088
95.....		.373		.373
96.....		.468	.043	.511
97.....	.007	.023		.030
98.....				
99.....				
100.....	.004			.004
101.....	.010			.010
102.....	.004	.274		.278
103.....	.002	.058		.060
104.....	.013	.047		.060
105.....				
106.....	.003	.049		.052
107.....		(e)	(e)	(e)
108.....	.040	.044		.084
109.....				
110.....				
111.....				
112.....			.500	.500
113.....				
114.....		(e)		(e)
115.....			.589	.589
116.....	.004			.004
117.....			.483	.483
118.....	.005		.047	.032

a Insurance not paid by lessee of furnace.

b Rental of furnace.

c Not including insurance.

d Of this amount \$0.250 is rental of furnace.

e Not reported.

f Not including interest.

From the foregoing table have been drawn certain minor tables showing various features for the twenty-six blast furnaces of the northern district of the United States, and the twenty-four of the southern district making run of furnace pig iron, by which the relative condition and results can be intelligently studied. These minor tables are as follows:

RUN OF FURNACE PIG IRON IN THE UNITED STATES.
DESCRIPTION OF FURNACES AND QUANTITY OF PRODUCT.

Northern district.				Southern district.			
Description of furnace.			Tons (2,240 lbs.) produced per day per fur- nace.	Description of furnace.			Tons (2,240 lbs.) produced per day per fur- nace.
Establishment number.	Diameter of bosh (inches).	Height of stack (feet).		Establishment number.	Diameter of bosh (inches).	Height of stack (feet).	
65	144	52	34	91.....	204	75	69
66.....	192	75	118	92.....	(a)	(b)	c61
67.....	192	75	107	93.....	192	75	85
68.....	186	72	122	94.....	216	75	102
69.....	192	75	106	95.....	164	65	52
70.....	174	57	44	96.....	210	65	81
71.....	192	75	156	97.....	192	75	98
72.....	222	77	100	98.....	192	75	67
73.....	186	59	42	99.....	240	80	103
74.....	186	56	89	100.....	(d)	(e)	c86
75.....	192	60	94	101.....	204	75	72
76.....	168	63	91	102.....	204	63	69
77.....	186	72	84	103.....	192	60	95
78.....	156	50	34	104.....	156	60	64
79.....	162	60	54	105.....	(f)	65	c47
80.....	204	65	45	106.....	192	60	113
81.....	198	63	63	107.....	216	75	100
82.....	150	61	25	108.....	240	70	84
83.....	144	60	27	109.....	192	70	105
84.....	162	60	49	110.....	(g)	60	c42
85.....	138	43	15	111.....	150	61	37
86.....	168	60	96	112.....	204	75	109
87.....	148	60	74	113.....	222	80	119
88.....	168	70	80	114.....	132	60	35
89.....	180	65	111				
90.....	204	66	119				

a One 198 and one 213 inches.

b One 63 and one 75 feet.

c Average product per day of two furnaces of different sizes.

d One 192 and one 204 inches.

e One 65 and one 70 feet.

f One 168 and one 180 inches.

g One 132 and one 168 inches.

SUMMARY OF DESCRIPTION OF FURNACES AND QUANTITY OF PRODUCT.

Items.	Northern district.	Southern district.
Establishments reporting the facts required for statements below	26	24
Furnaces	29	35
Average diameter of bosh (inches)	179.1	198.7
Average height of stack (feet)	64.1	70.6
Average production per day per furnace (tons of 2,240 pounds)	86.6	77.8

The general results as to measurement discoverable in the preceding table are that for the twenty-six northern establishments the average diameter of bosh is 179.1 inches and the average height of stack 64.1 feet; and for the twenty-four southern that the average diameter of bosh is 198.7 inches and the average height of stack 70.6 feet. In spite, however, of the larger cubical contents of southern furnaces the average product per furnace for the northern district was 86.6 tons, and for southern district 77.8 tons. If we now examine the next table we will get some notion of the cause of this.

QUANTITY OF IRON IN ORE, AND TONS OF ORE, ETC., TO ONE TON OF PRODUCT.

Northern district.				Southern district.			
Establishment number.	Per cent. (average) of metallic iron in ore used.	Tons of ore to one ton of product.	Tons of cinder, scrap, etc., to one ton of product.	Establishment number.	Per cent. (average) of metallic iron in ore used.	Tons of ore to one ton of product.	Tons of cinder, scrap, etc., to one ton of product.
65.....	59.8	1.530	.834	91.....	(b)	2.414	.010
66.....	55.8	1.686	.....	92.....	43.8	2.358	.....
67.....	65.4	1.336	.386	93.....	49.6	2.200	.....
68.....	60.0	1.642	.061	94.....	46.8	2.123	.....
69.....	59.3	1.624	.148	95.....	47.2	2.006	.100
70.....	52.0	1.922	.....	96.....	47.4	2.167	.090
71.....	62.0	1.669	.....	97.....	53.0	2.110	.....
72.....	56.5	1.294	.478	98.....	47.5	2.305	.....
73.....	52.3	1.723	.253	99.....	48.9	2.521	.....
74.....	(a)	1.859	.....	100.....	44.4	2.264	.....
75.....	61.7	1.212	.466	101.....	46.0	2.290	.014
76.....	61.1	1.237	.388	102.....	39.5	2.722	.....
77.....	62.6	1.278	.446	103.....	47.4	1.979	.123
78.....	51.1	1.082	.891	104.....	49.6	1.966	.....
79.....	(a)	1.896	.309	105.....	38.8	2.508	.....
80.....	(a)	2.580	.....	106.....	46.1	1.812	.111
81.....	45.8	1.509	.509	107.....	50.2	1.973	.....
82.....	(a)	1.683	.521	108.....	38.8	2.052	.....
83.....	54.4	1.356	.514	109.....	52.5	2.530	.....
84.....	(a)	1.881	.309	110.....	48.1	2.096	.....
85.....	(a)	2.870	.287	111.....	42.5	2.379	.....
86.....	60.0	1.643	.257	112.....	44.0	2.328	.....
87.....	50.5	1.546	.182	113.....	42.0	2.252	.....
88.....	(a)	2.239	.093	114.....	47.0	2.193	.....
89.....	59.7	1.675	.....			
90.....	60.0	1.496	.194				

b From 35.5 to 47.8.

Items.	Northern district.	Southern district.
Establishments reporting both per cent. of iron in ore and the tons of ore used.	19	23
Per cent. of iron in an average ton of ore in these establishments	58.9	45.5
Establishments using ore only	6	18
Tons of ore used in these establishments	322,609	1,118,838
Tons of product in these establishments	185,090	481,215
Average tons of ore to 1 ton of product in these establishments	1.743	2.325
Establishments using both ore and cinder, scrap, etc.	20	6
Tons of ore used in these establishments	538,127	305,472
Tons of cinder, scrap, etc., used in these establishments	119,225	9,713
Tons of product in these establishments	359,278	166,513
Average tons of ore to 1 ton of product in these establishments	1.498	2.195
Average tons of cinder, scrap, etc., to 1 ton of product in these establishments.	.332	.058

It is generally the case that a mix of several kinds of ores is used varying somewhat in the proportions of certain important constituents. The per cent. of metallic iron, therefore, shown in the preceding table is generally an average based on the several different per cents., taking into account the quantities of each ore used. It will be seen at a glance that the proportion of iron in the ore is much smaller in the southern than in the northern district, the actual average for the 19 northern establishments, for which figures are given, being 58.9 per cent., and for the 23 southern, 45.5 per cent. Naturally, then, a larger quantity of ore must be

used in the south. Reference to the table shows that for establishments depending on ore alone the 6 northern used an average of 1.743 tons, and the 18 southern 2.325; and that for those using cinder, scrap, etc., as well as ore the average of ore was for the 20 northern 1,498 tons, and for the 6 southern 2.195 tons. It is apparent that the southern furnaces depend much more largely on ore alone, and for those that use cinder, scrap, etc., in addition the proportion is only 0.058 ton per ton of product against 0.332 ton in the north.

The following table shows the tons of each different material used to one ton of product:

RUN OF FURNACE PIG IRON IN THE UNITED STATES.

TONS OF MATERIAL TO ONE TON OF PRODUCT.

[The ton considered is of 2,240 pounds.]

Northern district.							Southern district.						
Es- tab- lish- ment num- ber.	Ore.	Cin- der, scrap, etc.	Lime- stone.	Coke.	Coal.	Total.	Es- tab- lish- ment num- ber.	Ore.	Cin- der, scrap, etc.	Lime- stone.	Coke.	Coal.	Total.
65	1.530	.834	.744	.....	2.818	5.426	91 ..	2.414	.010	.450	1.829	.....	4.703
66	1.686	.....	.400	1.197	.011	3.294	92 ..	2.358	.....	.733	1.563	.....	4.654
67	1.336	.386	.451	1.117	.....	3.290	93 ..	2.300	.....	.788	1.257	.....	4.345
68	1.642	.061	.347	1.250	.098	3.398	94 ..	2.128	.....	.604	1.150	.....	3.882
69	1.624	.148	.546	1.348	.....	3.668	95 ..	2.006	.100	.925	1.793	.....	4.824
70	1.922	.....	.336	1.329	.056	3.643	96 ..	2.167	.090	.764	1.331	.....	4.352
71	1.669	.....	.470	.912	.....	3.060	97 ..	2.110	.....	.376	1.858	.....	3.844
72	1.294	.478	.987	1.373	.....	4.132	98 ..	2.305	.....	.835	1.476	.....	4.616
73	1.723	.253	.850	.381	a1.043	4.250	99 ..	2.521	.....	.450	1.513	.....	4.484
74	1.859	.....	.724	.461	a.768	3.812	100 ..	2.264	.....	.520	1.649	.....	4.433
75	1.212	.466	.720	1.268	.....	3.666	101 ..	2.290	.014	.598	1.774	.....	4.676
76	1.237	.388	.475	1.178	.....	3.278	102 ..	2.722	.....	.580	1.841	.....	5.143
77	1.278	.446	.573	1.118	.209	3.624	103 ..	1.979	.123	.741	1.262	.....	4.105
78	1.082	.891	.912	.256	a1.267	4.408	104 ..	1.966	.....	.969	1.550	.....	4.485
79	1.896	.309	.958	.823	a.533	4.519	105 ..	2.598	.....	.433	1.551	.183	4.765
80	2.580	.....	2.053	1.489	.....	6.122	106 ..	1.812	.111	.777	1.120	.....	3.820
81	1.569	.509	1.004	1.834	.....	4.916	107 ..	1.973	.....	.657	1.468	.....	4.098
82	1.683	.521	1.569	2.054	.....	5.827	108 ..	2.952	.....	.....	1.513	.....	4.465
83	1.856	.514	1.222	1.659	.....	4.751	109 ..	2.530	.....	1.125	1.330	.....	4.985
84	1.881	.309	.949	.896	a.465	4.500	110 ..	2.096	.....	.791	1.089	.....	3.926
85	2.870	.287	1.441	.046	a1.401	6.045	111 ..	2.379	.....	1.290	1.421	.....	5.090
86	1.643	.257	.505	1.103	.....	3.508	112 ..	2.328	.....	1.005	1.118	.....	4.451
87	1.546	.182	.627	1.183	.....	3.538	113 ..	2.252	.....	1.011	1.222	.....	4.485
88	2.239	.093	1.587	1.242	.....	5.161	114 ..	2.192	.....	.929	1.463	.....	4.584
89	1.675	.....	.323	1.092	.....	3.090							
90	1.496	.194	.362	1.031	.....	3.083							

a Anthracite coal.

SUMMARY OF TONS OF MATERIAL TO ONE TON OF PRODUCT.

[The ton considered is of 2,240 pounds.]

Items.	Northern district.	Southern district.
Establishments reporting the facts required for statements below.....	26	24
Tons of ore used in these establishments.....	860,736	1,484,810
Tons of cinder, scrap, etc., used in these establishments.....	119,225	9,713
Tons of limestone used in these establishments.....	342,361	433,614
Tons of coke used in these establishments.....	600,754	936,965
Tons of coal used in these establishments.....	74,935	511
Tons of all material used in these establishments.....	1,998,011	2,865,143
Tons of product in these establishments.....	544,877	647,728
Average tons of ore to 1 ton of product in these establishments.....	1.581	2.292
Average tons of cinder, scrap, etc., to 1 ton of product in these establishments..	.219	.015
Average tons of limestone to 1 ton of product in these establishments.....	.629	.669
Average tons of coke to 1 ton of product in these establishments.....	1.103	1.440
Average tons of coal to 1 ton of product in these establishments.....	.138	.001
Average tons of all material to 1 ton of product in these establishments.....	3.670	4.423

By the above we see that the average quantity of ore used to one ton of product in the northern district is 1.581 tons, of cinder, scrap, etc., 0.219 tons, of limestone 0.629 tons, of coke 1.103 tons, of coal 0.138 tons, and of all materials 3.67 tons; in the southern district it is for the 21 establishments, of ore 2.292 tons, of cinder, scrap, etc., 0.015 tons, of limestone 0.669 tons, of coke 1.446 tons, of coal 0.001 tons, and of all material 4.423 tons. The north uses more cinder, scrap, etc., and more coal; as a fact only 1 of the southern establishments to 11 of the northern use coal, but the south uses more ore, more limestone, and more coke. There are several facts that need to be kept in mind in order to account in a reasonable way for the great differences in the quantities of materials used. For one, the richness of the ore used in metallic iron. This will largely affect not only the quantity of ore necessary for the production of a ton of iron, but by consequence the amount of fuel necessary to smelt it.

Again, the character of the ore used. Some ores are more difficult to smelt than others and require a larger quantity of fluxing materials (limestone). Finally, the composition of the auxiliary materials. There are quite wide differences in the richness and purity of the auxiliary materials—i. e., limestone and coal or coke—in different localities which would affect the quantities necessary for the production of a ton of iron independently of any difference in the quantity and quality of the ore. The cost of these various materials is considered in the next table.

RUN OF FURNACE PIG IRON IN THE UNITED STATES.
COST OF MATERIALS PER TON.
[The ton considered is of 2,240 pounds.]

Northern district.						Southern district.					
Estab- lishment number.	Ore.	Cin- der, scrap, etc.	Lime- stone.	Coke.	Coal.	Estab- lishment number.	Ore.	Cin- der, scrap, etc.	Lime- stone.	Coke.	Coal.
65.....	\$3. 645	\$1. 300	\$0. 896	.....	\$1. 638	91.....	\$0. 647	\$0. 685	\$0. 906	\$2. 843	.....
66.....	4. 464	.....	. 662	\$2. 782	2. 400	92.....	. 918	.....	. 651	2. 916	.....
67.....	4. 002	2. 601	1. 000	3. 015	.....	93.....	1. 441	.....	. 670	4. 368	.....
68.....	4. 900	3. 250	. 800	3. 080	1. 515	94.....	1. 570	.....	. 605	3. 993	.....
69.....	4. 272	3. 250	. 750	3. 471	.....	95.....	1. 327	1. 000	. 629	2. 022	.....
70.....	3. 459	.....	. 790	3. 020	1. 736	96.....	1. 194	1. 098	. 520	3. 360	.....
71.....	4. 500	.....	. 900	3. 640	.....	97.....	1. 432	.....	. 840	3. 731	.....
72.....	5. 535	2. 948	. 838	1. 533	.....	98.....	1. 827	.....	. 900	3. 920	.....
73.....	4. 298	2. 100	1. 130	4. 379	a 2. 914	99.....	1. 065	.....	. 650	2. 800	.....
74.....	4. 000	.....	. 900	4. 700	a 3. 576	100.....	. 865	.....	. 623	2. 573	.....
75.....	5. 243	2. 750	. 672	2. 979	.....	101.....	. 866	. 750	. 653	2. 838	.....
76.....	4. 615	2. 504	. 814	2. 746	.....	102.....	1. 567	.....	. 305	2. 380	.....
77.....	5. 861	3. 250	. 750	3. 472	1. 940	103.....	1. 840	1. 072	. 756	3. 953	.....
78.....	3. 942	1. 751	. 501	3. 796	a 2. 849	104.....	2. 014	.....	. 737	2. 100	.....
79.....	3. 267	2. 000	. 900	3. 359	a 2. 850	105.....	1. 520	.....	. 543	2. 488	\$1. 566
80.....	2. 638	.....	. 360	3. 156	.....	106.....	2. 063	1. 203	. 670	3. 808	.....
81.....	4. 044	2. 692	1. 210	1. 322	.....	107.....	2. 104	.....	. 750	3. 560	.....
82.....	2. 782	3. 029	. 800	1. 064	.....	108.....	1. 080	.....	.....	2. 564	.....
83.....	4. 735	2. 750	. 789	1. 197	.....	109.....	1. 950	.....	. 720	3. 024	.....
84.....	3. 137	2. 213	. 881	3. 222	a 2. 858	110.....	1. 650	.....	. 610	4. 104	.....
85.....	1. 709	2. 000	. 850	3. 540	a 3. 050	111.....	1. 772	.....	. 745	3. 797	.....
86.....	3. 676	2. 101	. 800	2. 770	.....	112.....	2. 016	.....	. 700	2. 609	.....
87.....	5. 128	3. 250	. 886	3. 080	.....	113.....	2. 250	.....	. 750	3. 262	.....
88.....	2. 546	1. 742	. 400	3. 080	.....	114.....	1. 867	.....	. 830	2. 074	.....
89.....	5. 234	.....	. 793	2. 827	.....					
90.....	4. 183	1. 789	. 930	4. 827	.....					

a Anthracite coal.

RUN OF FURNACE PIG IRON IN THE UNITED STATES Concluded.

SUMMARY OF COST OF MATERIALS PER TON.

[The ton considered is of 2,240 pounds.]

Items.	Northern district.	Southern district.
Establishments reporting the facts required for statements below.....	28	24
Cost of the ore used in these establishments.....	\$3,787,982	\$2,245,830
Cost of the cinder, scrap, etc., used in these establishments.....	812,679	10,011
Cost of the limestone used in these establishments.....	273,207	304,142
Cost of the coke used in these establishments.....	1,810,814	2,809,676
Cost of the coal used in these establishments.....	201,940	800
Average cost of one ton of this ore.....	4.401	1.513
Average cost of one ton of this cinder, scrap, etc.....	2.631	1.031
Average cost of one ton of this limestone.....	.798	.701
Average cost of one ton of this coke.....	3.014	3.084
Average cost of one ton of this coal.....	2.695	1.565

The preceding table shows that in the northern district the ore used cost per ton on an average \$4.401, the cinder, scrap, etc., \$2.631, the limestone 79.8 cents, the coke \$3.014, the coal \$2.695; and in the southern district the ore \$1.513, the cinder, scrap, etc., \$1.031, the limestone 70.1 cents, the coke \$3.084, and the coal \$1.565. The difference in favor of the south in the cost of ore and of coal is very great, a difference as far as the ore is concerned which we have seen is partially offset by its comparatively lower per cent. of iron. The cost of these materials per ton of product is now considered.

RUN OF FURNACE PIG IRON IN THE UNITED STATES.

COST OF MATERIALS PER TON OF PRODUCT.

[The ton considered is of 2,240 pounds. In the northern district establishments numbered 66, 70, 71, 74, 80, and 89 use ore only; all others a mixture of ore, cinder, scrap, etc. In the southern district those numbered 91, 95, 96, 101, 103, and 106 use a mixture of ore, cinder, scrap, etc., and all others use ore only. In the northern district establishment number 65 uses coal only, those numbered 66, 68, 70, 73, 74, 77, 78, 79, 84, and 85 use a mixture of coke and coal, and all others use coke only. In the southern district establishment number 105 uses a mixture of coke and coal, and all others use coke only.]

Northern district.					Southern district.				
Establishment number.	Ore and cinder, scrap, etc.	Limestone.	Coke and coal.	Total.	Establishment number.	Ore and cinder, scrap, etc.	Limestone.	Coke and coal.	Total.
65.....	\$6.661	\$0.667	\$3.707	\$11.125	91.....	\$1.568	\$0.408	\$5.197	\$7.173
66.....	7.525	.265	3.337	11.147	92.....	2.165	.477	4.560	7.202
67.....	7.674	.451	3.867	11.492	93.....	3.315	.528	5.491	9.334
68.....	8.243	.278	3.998	12.519	94.....	3.340	.365	4.600	8.305
69.....	7.417	.410	4.679	12.506	95.....	2.763	.646	4.701	8.110
70.....	6.648	.266	4.110	11.024	96.....	2.686	.397	4.471	7.554
71.....	7.510	.431	3.820	11.261	97.....	3.021	.315	5.068	8.404
72.....	8.570	.827	2.105	11.502	98.....	4.211	.752	5.784	10.747
73.....	7.937	.960	4.710	13.607	99.....	2.686	.293	4.237	7.216
74.....	7.435	.652	4.915	13.002	100.....	1.960	.324	4.243	6.527
75.....	7.637	.484	3.776	11.897	101.....	1.903	.391	5.033	7.417
76.....	6.752	.386	3.234	10.372	102.....	4.266	.229	4.382	8.877
77.....	8.941	.429	4.290	13.660	103.....	3.774	.560	4.991	9.325
78.....	5.824	.457	4.582	10.863	104.....	3.959	.714	3.256	7.929
79.....	6.813	.861	4.284	11.958	105.....	3.948	.235	4.157	8.340
80.....	6.808	.739	4.700	12.247	106.....	3.873	.520	4.263	8.656
81.....	7.715	1.214	2.425	11.354	107.....	4.151	.493	4.031	9.575
82.....	6.259	1.256	2.185	9.700	108.....	4.977	.....	3.878	8.855
83.....	7.833	.964	1.986	10.783	109.....	4.935	.810	4.021	9.766
84.....	6.584	.837	4.229	11.650	110.....	3.417	.483	4.264	8.164
85.....	5.478	1.223	4.436	11.139	111.....	4.215	.961	5.397	10.573
86.....	7.166	.404	3.054	10.624	112.....	4.694	.704	3.016	8.414
87.....	8.518	.561	3.644	12.723	113.....	5.066	.758	3.986	9.810
88.....	5.953	.635	3.824	10.412	114.....	4.003	.771	4.498	9.262
89.....	8.769	.256	3.087	12.112					
90.....	6.606	.336	4.975	11.917					

RUN OF FURNACE PIG IRON IN THE UNITED STATES—Concluded.

SUMMARY OF COST OF MATERIALS PER TON OF PRODUCT.

[The ton considered is of 2,240 pounds.]

Items.	Northern district.	Southern district.
Establishments reporting the facts required for statements below.....	26	24
Cost of the ore, cinder, scrap, etc., used in these establishments.....	\$4,101,681	\$2,255,841
Cost of the limestone used in these establishments	\$273,207	\$304,142
Cost of the coke and coal used in these establishments	\$2,012,754	\$2,899,478
Cost of all materials used in these establishments	\$6,387,622	\$3,459,459
Tons of product in these establishments.....	544,377	647,728
Average cost of ore, cinder, scrap, etc., per ton of product in these establishments.	\$7.534	\$3.482
Average cost of limestone per ton of product in these establishments .....	.502	.470
Average cost of coke and coal per ton of product in these establishments.....	3.698	4.462
Average cost of all materials per ton of product in these establishments.....	11.734	8.414

In this table, showing the cost of materials per ton of product, the costs of ore, cinder, scrap, etc., are combined, as they alike furnish the material from which the metal is obtained, and for a kindred reason the costs of coke and coal are united. The average cost per ton of product in the northern district is, for ore, cinder, scrap, etc., \$7.534, for limestone 50.2 cents, for coke and coal \$3.698, and for all materials \$11.734; in the southern district, for ore, cinder, scrap, etc., \$3.482, for limestone 47 cents, for coke and coal \$4.462, and for all materials \$8.414. As might have been expected from the preceding tables we find the cost of materials per ton of product generally lower in the south than in the north, the only articles higher being coke and coal. An earlier table which gives the tons of material used to one ton of product (page 64) shows that the combination coke and coal means coke simply in the southern establishments, as only one of them uses coal, and that the quantity of coke necessary to one ton of product is 1.446 tons in the south to 1.103 tons in the north. The table preceding the one under consideration shows the average cost per ton of coke in the south to be \$3.084, and in the north \$3.014, a very trifling difference, so that the real reason for the larger cost of coke and coal per ton of product in the south seems to be the larger quantity of coke necessary. Let us examine now the cost of labor and other items of expense per ton of product in the two sections.

ACKNOWLEDGMENTS

Abstract

Summary of the 1979-80 Fiscal Year of Project

2. The following information is provided for the year ended 31/12/2019:

By the above table the average cost per ton of product in the northern district is seen to be, for the labor of converting the materials into iron, \$1.474; for the salaries of officials and clerks, 18.4 cents; for supplies and repairs, 51 cents; and for taxes, 3.6 cents. In the southern district, for the labor of conversion, \$1.524; for salaries of officials and clerks, 16.4 cents; for supplies and repairs, 61.4 cents; and for taxes, 3.9 cents. The differences here are all very slight. Labor in the south is hired at cheaper rates, as will be seen by reference to Part II, where rates of wages are shown, but manifestly the larger quantity of material

handled in the south to obtain a ton of product, and the smaller efficiency, as is indicated by the tables devoted to the subject of efficiency of labor in Part II, more than offset these cheaper rates.

RUN OF FURNACE PIG IRON IN THE UNITED STATES.

COST OF ALL ELEMENTS PER TON OF PRODUCT.

[The ton considered is of 2,240 pounds.]

Northern district.				Southern district.			
Establishment number.	Materials.	Other.	Total.	Establishment number.	Materials.	Other.	Total.
65.....	\$11.125	\$2.082	\$13.207	91.....	\$7.173	\$2.461	\$9.634
66.....	11.147	1.673	12.820	92.....	7.202	3.065	10.267
67.....	11.492	1.744	13.236	93.....	9.334	2.407	11.741
68.....	12.519	a 2.092	a 14.611	94.....	8.305	3.005	11.310
69.....	12.506	2.330	14.836	95.....	8.110	3.669	11.779
70.....	11.024	2.276	13.300	96.....	7.554	2.327	9.881
71.....	11.261	2.427	13.688	97.....	8.404	2.463	10.867
72.....	11.502	1.669	13.171	98.....	10.747	2.066	12.813
73.....	13.607	1.892	15.499	99.....	7.216	2.225	9.441
74.....	13.002	2.450	15.452	100.....	0.527	2.024	9.161
75.....	11.897	1.906	13.803	101.....	7.417	3.193	10.610
76.....	10.372	2.052	12.424	102.....	8.877	1.915	10.792
77.....	13.680	2.116	15.796	103.....	9.325	1.821	11.146
78.....	10.868	2.757	13.625	104.....	7.929	1.900	9.829
79.....	11.958	2.636	14.594	105.....	8.340	1.593	9.933
80.....	12.247	2.275	14.522	106.....	8.656	1.504	10.160
81.....	11.351	2.725	14.076	107.....	9.575	2.496	12.071
82.....	9.700	3.085	12.785	108.....	8.835	1.170	10.005
83.....	10.783	2.780	13.563	109.....	9.766	2.637	12.403
84.....	11.650	2.306	14.016	110.....	8.164	1.459	9.623
85.....	11.139	2.533	13.672	111.....	10.573	2.340	12.913
86.....	10.624	2.873	12.997	112.....	8.414	2.068	10.482
87.....	12.723	2.027	14.750	113.....	9.810	1.782	11.592
88.....	10.412	2.595	13.007	114.....	9.362	2.463	11.825
89.....	12.112	2.746	14.858				
90.....	11.917	2.374	14.291				

a Not including taxes.

SUMMARY OF COST OF ALL ELEMENTS PER TON OF PRODUCT.

[The ton considered is of 2,240 pounds.]

Items.	Northern district.	Southern district.
Establishments reporting the facts required for the statements below.....	26	24
Cost of all materials used in these establishments	\$6,387,622	\$5,450,459
Cost of labor, etc., in these establishments.....	\$1,199,918	\$1,515,995
Cost of all elements in these establishments.....	\$7,587,540	\$6,966,454
Tons of product in these establishments.....	544,877	647,728
Average cost of all materials per ton of product in these establishments.....	\$11.734	\$8.414
Average cost of labor, etc., per ton of product in these establishments.....	2.204	2.341
Average cost of all elements per ton of product in these establishments.....	13.938	10.755

The above table simply combines the elements of the preceding one from labor to taxes under the term "Other", and reproduces the total cost of materials from an earlier table in order to reach a summation of the whole. It is here seen that in the north the average cost per ton of product for materials is \$11.734, for all other items \$2.204, total \$13.938; and in the south, for materials \$8.414, for all other items \$2.341, total \$10.755.

SUMMARIES OF COST OF PIG IRON OF VARIOUS GRADES.

While the general Table I at the beginning of this part exhibits in detail the cost of various kinds of pig iron and other materials for each establishment, it is necessary to cluster the results relating to cost for each great district, in order that the average for each particular district may be ascertained. For this purpose, the returns for run of furnace, gray forge, and Bessemer pig iron have been summarized in nine short tables which follow, each accompanied with notes sufficient to explain the points brought out. From them it will be seen that the average cost of run of furnace pig iron in twenty-six establishments in the northern district of the United States is \$13.938 per ton, and that the average for twenty-four establishments in the southern district of the United States is \$10.755 per ton, and for the single establishment representing the continent of Europe, a fairly typical one, \$11.028. The Department was not fortunate enough to secure facts from Great Britain which would allow this particular feature of comparison to be brought out. The average cost of gray forge pig iron in eight establishments in the northern district of the United States is shown to be \$13.50, while for Great Britain the average in three establishments is \$8.031 per ton, and on the continent of Europe, in two establishments, \$9.065. Bessemer pig iron, as shown by twenty-four establishments in the northern district of the United States, costs on an average \$15.366; for four establishments in Great Britain, \$10.326, and for three on the continent of Europe, \$11.739 per ton.

Each of these nine tables is supplemented with a statement of the average cost per ton for insurance, interest, and depreciation of value of plant, which are here designated as theoretical elements of cost. These items have been given for only a very few establishments, as explained in the introduction, because producers do not, as a rule, consider them elements of cost; but such as have been reported in answer to inquiries on these points have been tabulated. It will be seen that for run of furnace pig iron in some of the establishments of the northern district of the United States these theoretical elements would add 16.6 cents to the average cost of one ton, while for the same kind of product in southern establishments the addition would be 16.8 cents. For the continent of Europe these elements would add 58.9 cents in the cases given. For gray forge pig iron in the establishments in the northern district giving the facts, the theoretical elements would add 19.7 cents to the average cost of one ton, for Great Britain 20 cents, and for the continent of Europe 6 cents. To the average cost of a ton of Bessemer pig iron in the northern district of the United States, for the establishments giving such information, the theoretical elements of cost would add 22.2 cents, and in Great Britain 8.4 cents. The tables referred to now follow:

SUMMARY OF COST OF RUN OF FURNACE PIG IRON IN TWENTY-SIX ESTABLISHMENTS IN THE NORTHERN DISTRICT OF THE UNITED STATES.

[The detailed exhibit from which this summary is drawn may be found on page 85, *et seq.* The establishments covered are numbers 65 to 90, inclusive, being all the run of furnace establishments in the northern district of the United States from which reports were obtained. As may be seen, the periods covered are irregular and are in the years 1888, 1889, and 1890.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 544,377.	Average cost of one.
Ore	\$3, 787, 982	\$3. 958
Cinder, scrap, etc.....	313, 679	.576
Limestone	273, 207	.502
Coke.....	1, 810, 814	3.327
Coal	201, 940	.371
Total material.....	6, 387, 622	11.734
Labor.....	802, 283	1.474
Officials and clerks.....	100, 607	.184
Supplies and repairs.....	277, 413	.510
Taxes	19, 615	.036
Total	7, 587, 540	12.938

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Nineteen establishments gave the amount paid for insurance; the aggregate of these makes the sum credited to this item below. Seven reported that they had no insurance. Ten establishments gave the amount paid for interest; the aggregate of these makes the sum below. Thirteen reported that there was no expenditure for interest, and for three no statement was obtained. One establishment only gave the amount charged to depreciation, which makes the sum below. Twenty-five reported that nothing was charged to this item. The amounts entered in the first column below are, of course, apportioned in the second column among the whole twenty-six establishments.]

Insurance	\$4, 176	\$0.008
Interest	66, 395	.122
Depreciation of value of plant	20, 000	.036
Total	90, 571	.166

SUMMARY OF COST OF RUN OF FURNACE PIG IRON IN TWENTY-FOUR ESTABLISHMENTS IN THE SOUTHERN DISTRICT OF THE UNITED STATES.

[The detailed exhibit from which this summary is drawn may be found on page 85, *et seq.* The establishments covered are numbers 91 to 114, inclusive, being all the run of furnace establishments in the southern district of the United States from which reports were obtained. As may be seen, the periods covered are irregular and are in the years 1888, 1889, and 1890.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 647,728.	Average cost of one.
Ore	\$2, 245, 830	\$3.467
Cinder, scrap, etc	10, 011	.015
Limestone	304, 142	.476
Coke.....	2, 889, 676	4.461
Coal	800	.001
Total materials	5, 450, 459	8.414
Labor.....	987, 111	1.524
Officials and clerks.....	106, 963	.164
Supplies and repairs.....	397, 550	.614
Taxes	25, 372	.039
Total	6, 968, 454	10.755

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Nine establishments gave the amount paid for insurance; the aggregate of these makes the sum credited to this item below. Fifteen reported that they had no insurance. Ten establishments gave the amount paid for interest; the aggregate of these makes the sum below. Twelve reported that there was no expenditure for interest, and for two no statement was obtained. Four establishments gave the amount charged to depreciation; the aggregate of these makes the sum below. Nineteen reported that nothing was charged to this item, and for one no statement was obtained. The aggregates entered in the first column below are, of course, apportioned in the second column among the whole twenty-four establishments.]

Insurance	\$3, 828	\$3.006
Interest.....	61, 908	.096
Depreciation of value of plant.....	42, 902	.066
Total	108, 638	.168

SUMMARY OF COST OF RUN OF FURNACE PIG IRON IN ONE ESTABLISHMENT ON THE CONTINENT OF EUROPE.

[The detailed exhibit from which this summary is drawn may be found on page 35, *et seq.* The establishment considered is number 115, being the only one making run of furnace pig iron on the continent of Europe from which a report was obtained. As may be seen, the period covered is the calendar year of 1889.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 33,685.	Average cost of one.
Ore	\$154,773	\$4.595
Cinder, scrap, etc.	67,042	2.017
Limestone	13,006	.386
Coke	97,028	2.880
Coal	238	.007
Total materials	332,087	9.885
Labor	47,620	1.414
Officials and clerks	8,225	.244
Supplies and repairs	16,428	.488
Taxes	1,321	.039
Total	a 406,581	b 12.070

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[The establishment covered by this summary reported that it had no insurance, and that there was no expenditure for interest. It gave the amount charged to depreciation, which makes the sum credited to that item below.]

Insurance .....	.....	.....
Interest .....	.....	.....
Depreciation of value of plant	\$19,846	\$0.569
Total	19,846	.569

a From this amount should be deducted \$35,089, the value of lead, zinc, and other incidental products of manufacture.

b From this amount should be deducted \$1.042, the value of lead, zinc, and other incidental products per ton of iron produced, leaving the total net cost \$11.028.

SUMMARY OF COST OF GRAY FORGE PIG IRON IN EIGHT ESTABLISHMENTS IN THE NORTHERN DISTRICT OF THE UNITED STATES.

[The detailed exhibit from which this summary is drawn may be found on page 35, *et seq.* The establishments covered are numbers 52 to 59, inclusive, being all the gray forge establishments in the United States from which reports were obtained. As may be seen, the periods covered are irregular and are in the years 1888 and 1889.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 195,631.	Average cost of one.
Ore	\$1,248,808	\$6.384
Cinder, scrap, etc.	226,402	1.157
Limestone	106,883	.546
Coke	575,759	2.043
Coal	80,419	.411
Total materials	2,238,271	11.441
Labor	257,677	1.317
Officials and clerks	29,255	.150
Supplies and repairs	110,558	.565
Taxes	5,254	.027
Total	2,641,015	13.500

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Six establishments gave the amount paid for insurance; the aggregate of these makes the sum credited to this item below. One reported that it had no insurance, and for one the agent of the Department failed to obtain a statement. Five establishments gave the amount paid for interest; the aggregate of these makes the sum below. Three reported that there was no expenditure for interest. Four establishments gave the amount charged to depreciation; the aggregate of these makes the sum below. Four reported that nothing was charged to this item. The aggregates entered in the first column below are, of course, apportioned in the second column among the whole eight establishments.]

Insurance	\$2,202	\$0.011
Interest	26,647	.136
Depreciation of value of plant	9,690	.050
Total	38,545	.197

SUMMARY OF COST OF GRAY FORGE PIG IRON IN THREE ESTABLISHMENTS IN GREAT BRITAIN.

[The detailed exhibit from which this summary is drawn may be found on page 35, *et seq.* The establishments covered are numbers 61 to 63, inclusive, being all the gray forge establishments in Great Britain from which reports were obtained. As may be seen, the periods covered are irregular and are in the years 1880 and 1889.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 34,696.	Average cost of one.
Ore	\$127, 733	\$3. 681
Cinder, scrap, etc.	1, 478	. 043
Limestone	12, 539	. 361
Coke	99, 097	2. 882
Coal	908	. 026
Total materials	242, 055	6. 993
Labor	24, 178	. 697
Officials and clerks	1, 603	. 049
Supplies and repairs	9, 132	. 263
Taxes	994	. 029
Total	278, 654	8. 031

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Two establishments gave the amounts paid for insurance and interest; the aggregate of these makes the sums credited to these items below. One reported that there were no expenditures for insurance and interest. All three establishments reported that nothing was charged to depreciation. The aggregates entered in the first column below are, of course, apportioned in the second column among the whole three establishments.]

Insurance	\$42	\$0. 001
Interest	6, 901	. 199
Depreciation of value of plant		
Total	6, 943	. 200

SUMMARY OF COST OF GRAY FORGE PIG IRON IN TWO ESTABLISHMENTS ON THE CONTINENT OF EUROPE.

[The detailed exhibit from which this summary is drawn may be found on page 35, *et seq.* The establishments covered are numbers 60 and 64, being all the gray forge establishments on the continent of Europe from which reports were obtained. As may be seen, the periods covered are irregular and are in the year 1889.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 69,097.	Average cost of one.
Ore	\$226, 524	\$3. 278
Cinder, scrap, etc.	57, 012	. 825
Limestone	4, 525	. 066
Coke	283, 383	4. 101
Coal	3, 069	. 044
Total materials	574, 515	8. 314
Labor	29, 032	. 420
Officials and clerks	4, 765	. 009
Supplies and repairs	15, 809	. 229
Taxes	1, 637	. 024
Total	629, 358	9. 065

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Two establishments gave the amount paid for insurance; the aggregate of these makes the sum credited to this item below. One establishment gave the amount paid for interest, which makes the sum below. One reported that there was no expenditure for interest. One establishment gave the amount charged to depreciation, which makes the sum below. One reported that nothing was charged to this item. The amounts entered in the first column below are, of course, apportioned in the second column among the two establishments.]

Insurance	\$109	\$0. 001
Interest	4, 002	. 053
Depreciation of value of plant	57	. 001
Total	4, 168	. 060

SUMMARY OF COST OF BESSEMER IRON IN FOUR ESTABLISHMENTS IN GREAT BRITAIN.

The detailed exhibit from which this summary is drawn may be found on page 35, et seq. The establishments covered are the four in Great Britain being all the Bessemer establishments in the United Kingdom. The periods covered are usually twelve months or less or more.

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 177 tons.	Average cost of one.
Iron	57,361.498	32.209
Clinder scrap, etc.	22.802	.104
Limestone	243.740	.433
Coke	2,424.387	2.196
Coal	154.447	.306
Total materials	60,371.774	13.250
Labor	1,195.422	1.386
Officials and clerks	138.913	.152
Supplies and repairs	425.958	.533
Taxes	77.128	.039
Total	62,109.187	15.366

SUMMARY OF COST OF MANUFACTURING ELEMENTS OF THE ABOVE.

Thirteen establishments gave the amounts paid for insurance. The aggregate of these makes the sum allotted to this item. The report of one establishment gave the amount paid for interest; the aggregate of these makes the sum allotted to this item. Seven reported that there was no expenditure for interest, and of these the aggregate of these makes the sum allotted to this item. Five establishments gave the amount charged to depreciation. The aggregate of these makes the sum allotted to this item. Seven reported that nothing was charged to this item, and of these the aggregate of these makes the sum allotted to this item. The aggregates entered in the first column below are, of course, apportioned to the 24 establishments among the whole twenty-four establishments.]

Insurance	96.943	90.009
Interest	81.785	.103
Depreciation	68.113	.110
Total	176.931	.222

SUMMARY OF COST OF BESSEMER IRON IN FOUR ESTABLISHMENTS IN GREAT BRITAIN.

The detailed exhibit from which this summary is drawn may be found on page 35, et seq. The establishments covered are the four in Great Britain being all the Bessemer establishments in Great Britain. The periods covered are irregular and are in the years 1898 and 1899.

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 174,144.	Average cost of one.
Iron	\$1,066,282	\$6.123
Clinder scrap, etc.	33,819	.194
Limestone	36,740	.211
Coke	450,081	2.636
Coal	1,914	.011
Total materials	1,597,836	9.175
Labor	116,429	.669
Officials and clerks	9,762	.056
Supplies and repairs	70,771	.406
Taxes	3,405	.020
Total	1,798,203	10.326

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE FOREGOING.

[One establishment only gave the amount paid for insurance, which makes the sum credited to this item below. Three reported that they had no insurance. One establishment only gave the amount paid for interest, which makes the sum below. Three reported that there was no expenditure for interest. All four establishments reported that nothing was charged to depreciation. The amounts entered in the first column below are, of course, apportioned in the second column among the whole four establishments.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 174,144.	Average cost of one.
Insurance.....	\$89	\$0.000
Interest.....	14,547	.034
Depreciation of value of plant.....		
Total.....	14,636	.084

SUMMARY OF COST OF BESSEMER PIG IRON IN THREE ESTABLISHMENTS ON THE CONTINENT OF EUROPE.

[The detailed exhibit from which this summary is drawn may be found on page 33, *et seq.* The establishments covered are numbers 33 to 35, inclusive, being all the Bessemer establishments on the continent of Europe from which reports were obtained. As may be seen, the periods covered are irregular, and are in the years 1887, 1888, and 1889. The facts relating to the theoretical elements of insurance, interest, and depreciation were not reported.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 194,412.	Average cost of one.
Ore; cinder, scrap, etc. (a).....	\$1,449,439	\$7.450
Limestone.....	46,502	.209
Coke.....	591,997	3.045
Coal.....		
Total materials.....	2,087,938	10.740
Labor; officials and clerks; supplies and repairs; taxes (a).....	194,299	.990
Total.....	2,282,237	11.739

a These costs are inseparably combined.

DIRECT LABOR, ETC., FROM THE MATERIALS IN THE EARTH TO THE FINISHED PRODUCT.

The question of the entire cost for labor in a ton of iron beginning with the raw materials as they lie in the earth is one which has recently been much considered. This, of course, is something quite different from what is commonly meant by the labor cost of a ton, which refers simply to the labor of the blast furnace in converting into iron, limestone, ore, and coke or coal, each of which may be considered as already a manufactured product having a labor cost of its own. To what extent it may be useful to trace the cost of a product back through the successive manufactured products made use of until finally the original elements in the earth, in the air, or in the waters of the earth are laid hold of is somewhat doubtful. If an ultimate analysis of such cost were possible the result, of course, would show the whole chargeable to labor, and the painful toil of the analysis might have been foregone by accepting this positive conclusion at the beginning. Yet if we limit the attempt and confine ourselves simply to discovering what was paid directly for labor at each successive stage, and what for certain other

important items which in an ultimate analysis would be resolvable into labor, the result may throw some light on the comparative cost of production in different localities, or determine for us whether there is any general sum that can ordinarily be safely set down as chargeable to labor or to the other items considered, as has been often held and practiced in preparing tabular *estimates* on cost of production. In the thirteen short tables which are now to be given this is what has been done. In order to see exactly among what separate heads, in addition to direct labor, it was necessary to divide the costs, let us examine the first of these; and we should take note at the outset that in the general tables on cost of production, I to XI, the data have been classified under cost of labor, of salaries of officials and clerks, of supplies and repairs, and of taxes.

Looking at the first of these tables relating to cost of direct labor, etc., we see that the entire cost of the ton is \$13.971, and that the cost of converting the materials into this ton of iron, in other words, the blast furnace cost, was for labor \$1.595; for salaries of officials and clerks, 17.5 cents; and for supplies, repairs, and taxes, 53 cents; leaving all in the lines above, equalling \$11.671, as the cost of the materials assembled at the furnace. In the books of the establishment each of these is charged in against the cost of the finished product at what it is held to have cost on the spot. The ore, for instance, is charged at a rate per ton that would make 5,810 pounds cost \$6.658; in other words, at \$2.567 per ton, and so of the other materials. Now, when this 5,810 pounds of ore is followed to the mine where it was dug and the costs ascertained for the points above mentioned, we find that there was expended for labor \$4.452; for salaries of officials and clerks, nothing; for supplies, repairs, and taxes, 52.9 cents, making \$4.981 as the cost of the ore at the mine. The cost of transportation to the blast furnace is now ascertained to be 95 cents, which, added to the preceding, makes the ore at the furnace cost \$5.931; but we have already noted that this ore at the furnace is rated as costing \$6.658, which we now see to be an excess over its actual cost of 72.7 cents. If the ore at the furnace is charged scrupulously at the exact figure of cost, which presumably is not always the case, as it might sometimes be difficult of ready determination, then this excess must be considered as wholly the profit of the mining establishment. If on the other hand the blast furnace simply calculates in the easiest way the approximate cost of ore and charges it in at that figure, making sure that the sum is high enough, as is quite likely the usual way, then this excess is partly only the profit of the miner, the remainder going to enlarge the profit of the blast furnace.

We now see that in addition to the items of cost provided for in tables I to XI there are also necessary in the presentation under view a column for cost of transportation of materials to point where used and one for difference between ts of materials and costs as charged against

the pig iron produced on the books of the blast furnace. What has here been said of the ore is, of course, equally applicable to the coal, the coke, and the limestone.

The utmost effort to get at the truth in these statements has been made, but the inherent difficulties, greatly in the way of diverse methods of bookkeeping, are such that the results are not wholly satisfactory. Yet in their principal features there is no doubt of their substantial accuracy. The column of difference between actual cost and blast furnace cost is the most unsatisfactory. In the column of cost of officials and clerks quite frequently nothing is entered. There are several reasons why this may occur. Often the work is administered by a foreman or boss whose wages are charged with other labor, and often the mines and coke ovens are managed by the blast furnace and the whole charge for supervision is made against the latter. Frequently the coke works own or control the coal mines by which they are supplied, and the trifling charge for administration is not divided in the accounts. Some of these establishments are included in the general tables, pages 31 to 61, but others are not. The tables referred to are now presented.

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Northern district of the United States. One ton of 2,240 pounds of run of furnace pig iron. The quantities and costs of ore, coal, coke, and limestone are the actual quantities and costs of the particular materials used.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies, repairs, and taxes.	Transport to point where used.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 5,810 pounds of iron ore	\$4.452	.....	\$0.529	\$0.950	\$0.727	\$6.658
Production of 4,528 pounds of limestone .....	.526	.....	.121	.040	.061	.748
Production of 6,797 pounds of bituminous coal.	2.258	.....	.349	.707	.253	3.567
Conversion of above coal into 3,990 pounds of coke.	.615	.....	.023	.....	.060	.698
Conversion of above materials into 2,240 pounds of pig iron.	1.595	\$0.175	.530	.....	.....	2.300
Total cost of one ton of pig iron	9.446	.175	1.552	1.097	1.101	13.971

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal, and coke	\$11.671
Cost of direct labor in producing the above materials	\$7.851
Per cent. of cost of direct labor in producing the above materials	67
Total cost of process of conversion	\$2.300
Cost of direct labor in process of conversion	\$1.595
Per cent. of cost of direct labor in process of conversion	69
Total cost of one ton of pig iron	\$13.971
Cost of direct labor in one ton of pig iron	\$9.446
Per cent. of cost of direct labor in one ton of pig iron	68

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Northern district of the United States. One ton of 2,240 pounds of Bessemer pig iron. The quantities of all the materials and the costs of ore, coal, and coke are the actual quantities and costs of the particular materials used. A detailed analysis of the cost of the limestone used could not be obtained, but that given is of a limestone produced in the same locality and having a total cost approximately the same.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 3,686 pounds of iron ore.	\$1.903	\$0.059	\$0.681	\$0.083	\$2.045	\$2.641	\$9.412
Production of 786 pounds of limestone.	.112	.001	.002	.....	.228	.003	.346
Production of 2,946 pounds of bituminous coal.	.520	.....	.088	.....	.....	.....	.608
Conversion of above coal into 2,200 pounds of coke.	.437	.033	.183	.017	2.043	.278	2.981
Production of 31 pounds of cinder, scrap, etc. (See below).	.....	.....	.....	.....	.....	.....	.....
Conversion of above materials into 2,240 pounds of pig iron.	1.440	.137	.250	.055	.....	.....	1.882
Total.....	4.412	.220	1.204	.155	5.316	3.922	15.220
Cost of above 31 pounds of cinder, scrap, etc., only the total of which can be given .....	.....	.....	.....	.....	.....	.....	.052
Total cost of one ton of pig iron.....	.....	.....	.....	.....	.....	.....	15.281

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal, and coke.....	\$13.347
Cost of direct labor in producing the above materials.....	\$2.972
Per cent. of cost of direct labor in producing the above materials	22
Total cost of process of conversion.....	\$1.882
Cost of direct labor in process of conversion.....	\$1.440
Per cent. of cost of direct labor in process of conversion.....	77
Total cost of one ton of pig iron	\$15.281
Cost of direct labor in one ton of pig iron.....	\$4.412
Per cent. of cost of direct labor in one ton of pig iron.....	29

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Northern district of the United States. One ton of 2,240 pounds of Bessemer pig iron. The quantities of all the materials and the costs of coke and of the coal used in said coke are the actual quantities and costs of the particular materials used. Nineteen kinds of ore were used, but the costs of eleven only were obtained. The costs of the ore shown below were computed from the known costs of the eleven. Detailed analyses of the costs of the limestone used and of the coal used as such could not be obtained. The analysis of cost of limestone given is from an establishment having a total cost approximating the total cost of the limestone actually used.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies, repairs, and taxes.	Transport to point where used.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 3,640 pounds of iron ore	\$2.537	\$0.121	\$0.804	\$2.831	\$2.981	\$9.271
Production of 1,050 pounds of limestone.....	.150	.001	.002	.188	.032	.373
Production of 4,468 pounds of bituminous coal.	.954	.088	.290	.....	.121	1.403
Conversion of above coal into 3,108 pounds of coke.	.558	.080	.071	1.973	.....	2.632
Production of 45 pounds of coal used as such. (See below.)	.....	.....	.....	.....	.....	.....
Conversion of above materials into 2,240 pounds of pig iron.	1.534	.820	.941	.....	.....	2.705
Total.....	5.733	.510	2.108	4.992	3.134	16.477
Cost of above 45 pounds of bituminous coal, only the total of which can be given.....	.....	.....	.....	.....	.....	.026
Total cost of one ton of pig iron .....	.....	.....	.....	.....	.....	16.503

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coke, and coal used in said coke	\$13.682
Cost of direct labor in producing the above materials	\$4.199
Per cent. of cost of direct labor in producing the above materials	31
Total cost of process of conversion.....	\$2.795
Cost of direct labor in process of conversion.....	\$1.534
Per cent. of cost of direct labor in process of conversion	55
Total cost of one ton of pig iron	\$16.503
Cost of direct labor in one ton of pig iron	\$5.733
Per cent. of cost of direct labor in one ton of pig iron	35

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Northern district of the United States. One ton of 2,240 pounds of Bessemer pig iron. The quantities of all the materials are the actual quantities of the particular materials used. Of the ore actually used the cost of a part only was obtained, and from that cost the costs given below were calculated. Detailed analyses of the costs of the limestone, coal, and coke used could not be obtained, but those given are from establishments having total costs approximately the same.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Timber	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 3,686 pounds of iron ore.	\$3.122	\$0.140	\$0.757	\$0.115	\$4.525	.....	\$1.678	\$10.337
Production of 963 pounds of limestone.	.124	.006	.008	.....	.215	.....	.077	.430
Production of 2,824 pounds of bituminous coal.	.866	.021	.007	.....	.....	\$0.017	.....	.911
Conversion of above coal into 1,939 pounds of coke.	.302	.000	.052	.....	.582	.....	.035	.980
Conversion of above materials into 2,240 pounds pig iron.	1.155	.151	.513	.041	.....	.....	.....	1.860
Total cost of one ton of pig iron.	5.569	.327	1.337	.156	5.322	.017	1.790	14.518

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal, and coke.....	\$12.658
Cost of direct labor in producing the above materials.....	\$1.414
Per cent. of cost of direct labor in producing the above materials.....	35
Total cost of process of conversion.....	\$1.860
Cost of direct labor in process of conversion.....	\$1.155
Per cent. of cost of direct labor in process of conversion.....	62
Total cost of one ton of pig iron.....	\$14.518
Cost of direct labor in one ton of pig iron.....	\$5.569
Per cent. of cost of direct labor in one ton of pig iron.....	39

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Northern district of the United States. One ton of 2,240 pounds of Bessemer pig iron. The quantities of all the materials and the costs of coke and of the coal used in said coke are the actual quantities and costs of the particular materials used. Twelve kinds of ore were used, but the costs of seven only were obtained. The costs of the ore shown below were computed from the known costs of the seven. Detailed analyses of the costs of the limestone used and of the coal used as such could not be obtained. The given analyses of costs of the limestone and of the coal used as such are from establishments having total costs approximately the same.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 3,695 pounds of iron ore.	\$2.357	\$0.095	\$0.697	\$0.062	\$1.732	\$4.814	\$9.777
Production of 948 pounds of limestone.	.135	.001	.002	.....	.254	.039	.431
Production of 2,816 pounds of bituminous coal.	.608	.....	.195	.....	.....	.....	.803
Conversion of above coal into 2,236 pounds of coke.	.414	.031	.015	.003	1.509	.209	2.181
Production of 317 pounds of bituminous coal used as such.	.095	.012	.005	.....	.048	.001	.161
Production of 29 pounds of cinder, scrap, etc. (See below.)	.....	.....	.....	.....	.....	.....	.....
Conversion of above materials into 2,240 pounds of pig iron.	1.665	.259	.416	.069	.....	.....	2.399
Total.....	5.274	.398	1.330	.144	3.543	5.063	15.752
Cost of the above 29 pounds of cinder, scrap, etc., only the total of which can be given.....	.....	.....	.....	.....	.....	.....	.071
Total cost of one ton of pig iron.....	.....	.....	.....	.....	.....	.....	15.823

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal, and coke.....	\$13.353
Cost of direct labor in producing the above materials.....	\$3.609
Per cent. of cost of direct labor in producing the above materials.....	27
Total cost of process of conversion.....	\$2.399
Cost of direct labor in process of conversion.....	\$1.665
Per cent. of cost of direct labor in process of conversion.....	69
Total cost of one ton of pig iron.....	\$15.823
Cost of direct labor in one ton of pig iron.....	\$5.274
Per cent. of cost of direct labor in one ton of pig iron.....	33

* Railway charges only.

† Includes considerable for water transportation which was not separable.

REPORT OF THE COMMISSIONER OF LABOR.

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Northern district of the United States. One ton of 2,240 pounds of foundry pig iron. The quantities of all the materials and the costs of ore, limestone, and coke are the actual quantities and costs of the particular materials used. A detailed analysis of the cost of the coal used could not be obtained, but that given is of a coal produced in the same locality and having a total cost approximately the same. The separation of the costs other than for direct labor and transportation was impossible.]

Materials and successive stages of conversion.	Direct labor.	Transport to point where used.	All other costs.	Total.
Production of 4,234 pounds of iron ore	\$1.378	\$2.270	\$1.797	\$5.445
Production of 1,006 pounds of limestone .....	.000	.068	.112	.270
Production of 3,614 pounds of bituminous coal .....	.726	.....	.170	.896
Conversion of above coal into 2,468 pounds of coke .....	.348	3.703	1.224	5.274
Conversion of above materials into 2,240 pounds of pig iron	1.159	.....	.641	1.800
Total cost of one ton of pig iron	3.701	6.040	3.944	13.685

• SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal, and coke	\$11.885
Cost of direct labor in producing the above materials	\$2.512
Per cent. of cost of direct labor in producing the above materials	21
Total cost of process of conversion	\$1.800
Cost of direct labor in process of conversion	\$1.159
Per cent. of cost of direct labor in process of conversion	64
Total cost of one ton of pig iron	\$13.685
Cost of direct labor in one ton of pig iron	\$3.701
Per cent. of cost of direct labor in one ton of pig iron	27

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Northern district of the United States. One ton of 2,240 pounds of hot blast charcoal pig iron. The quantities and costs of ore, limestone, wood, and charcoal are the actual quantities and costs of the particular materials used. The separation of the costs other than for direct labor and transportation was impossible.]

Materials and successive stages of conversion.	Direct labor.	Transport to point where used.	All other costs.	Total.
Production of 4,108 pounds of iron ore	\$2.010	\$2.711	\$2.323	\$7.044
Production of 153 pounds of limestone (a) .....	.003	.014	.....	.017
Production of 2.38 cords of wood	1.786	1.786	.238	3.810
Conversion of above wood into 100 bushels of charcoal	1.500	1.800	.210	3.510
Conversion of above materials into 2,240 pounds of pig iron	1.438	.....	.388	1.826
Total cost of one ton of pig iron	6.737	6.311	3.159	16.207

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, wood, and charcoal	\$14.381
Cost of direct labor in producing the above materials	\$5.209
Per cent. of cost of direct labor in producing the above materials	37
Total cost of process of conversion	\$1.826
Cost of direct labor in process of conversion	\$1.438
Per cent. of cost of direct labor in process of conversion	70
Total cost of one ton of pig iron	\$16.207
Cost of direct labor in one ton of pig iron	\$6.737
Per cent. of cost of direct labor in one ton of pig iron	42

a This limestone is the refuse of a building stone quarry and is sold much below cost of production. The figures given represent cost to the furnace.

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Southern district of the United States. One ton of 2,240 pounds of run of furnace pig iron. The quantities of all the materials and the costs of ore, coke, and limestone are the actual quantities and costs of the particular materials used. A detailed analysis of the cost of the coal used could not be obtained, but that given is from an establishment having a total cost approximately the same.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Timber.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 5,818 pounds of iron ore.	\$2.823	.....	\$0.156	\$0.018	\$0.779	.....	\$0.172	\$3.948
Production of 971 pounds of limestone.	.127	.....	.024	.001	.....	.....	.083	.235
Production of 5,789 pounds of bituminous coal.	2.284	\$0.032	.104	.009	.....	\$0.017	.070	2.606
Conversion of above coal into 3,474 pounds of coke.	.573	.008	.043	.009	.....	.....	.571	1.264
Production of 410 pounds of bituminous coal used as such.	.162	.002	.014	.001	.....	.001	.107	.287
Conversion of above materials into 2,240 pounds of pig iron.	1.324	.089	.144	.036	.....	.....	.....	1.593
Total cost of one ton of pig iron.	7.293	.191	.575	.074	.779	.018	1.003	9.933

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal, and coke	\$8.340
Cost of direct labor in producing the above materials	\$5.969
Per cent. of cost of direct labor in producing the above materials	72
Total cost of process of conversion	\$1.593
Cost of direct labor in process of conversion	\$1.324
Per cent. of cost of direct labor in process of conversion	83
Total cost of one ton of pig iron	\$9.933
Cost of direct labor in one ton of pig iron	\$7.293
Per cent. of cost of direct labor in one ton of pig iron	73

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Southern district of the United States. One ton of 2,240 pounds of run of furnace pig iron. The quantities of all the materials and the costs of ore, coal, and coke are the actual quantities and costs of the particular materials used. A detailed analysis of the cost of the limestone used could not be obtained, but that given is from an establishment having a total cost approximately the same.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Timber.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 5,072 pounds of iron ore.	\$1.234	\$0.052	\$0.088	\$0.009	\$0.566	.....	\$0.011	\$1.960
Production of 1,164 pounds of limestone.	.122	.017	.026	.001	.130	.....	.028	.324
Production of 5,744 pounds of bituminous coal.	2.263	.000	.086	.003	.574	\$0.020	.437	3.443
Conversion of above coal into 3,604 pounds of coke.	.528	.....	.242	.004	.....	.....	.026	.800
Conversion of above materials into 2,240 pounds of pig iron.	1.737	.156	.703	.038	.....	.....	.....	2.634
Total cost of one ton of pig iron.	5.884	.285	1.145	.065	1.270	.020	.502	9.161

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal, and coke	\$6.527
Cost of direct labor in producing the above materials	\$4.147
Per cent. of cost of direct labor in producing the above materials	64
Total cost of process of conversion	\$2.634
Cost of direct labor in process of conversion	\$1.737
Per cent. of cost of direct labor in process of conversion	66
Total cost of one ton of pig iron	\$9.161
Cost of direct labor in one ton of pig iron	\$5.884
Per cent. of cost of direct labor in one ton of pig iron	64

REPORT OF THE COMMISSIONER OF LABOR.

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Southern district of the United States. One ton of 2,345 pounds of run of furnace pig iron. The quantities of all the materials, and the costs of ore and coke are the actual quantities and costs of the particular materials used. Detailed analyses of the costs of the limestone and coal used could not be obtained, but those given are from establishments having total costs approximately the same.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Timber.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 4,695 pounds of iron ore.	\$1.111	\$0.179	\$0.361	\$0.048	\$0.534		\$0.283	\$3.417
Production of 1,772 pounds of limestone.	.352	.002	.004		.158		.007	.493
Production of 3,893 pounds of bituminous coal.	1.025	.017	.044	.013		\$0.031	.346	1.466
Conversion of above coal into 2,327 pounds of coke.	.329	.004	.043	.005	.073		1.456	2.769
Conversion of above materials into 2,345 pounds of pig iron.	.505	.170	.083	.101				1.459
Total cost of one ton of pig iron.	4.312	.463	1.045	.164	1.555	.031	2.071	9.623

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal, and coke.	\$3.184
Cost of direct labor in producing the above materials.	\$2.717
Per cent. of cost of direct labor in producing the above materials.	46
Total cost of process of conversion.	\$1.459
Cost of direct labor in process of conversion.	\$0.505
Per cent. of cost of direct labor in process of conversion.	41
Total cost of one ton of pig iron.	\$9.623
Cost of direct labor in one ton of pig iron.	\$4.312
Per cent. of cost of direct labor in one ton of pig iron.	45

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Southern district of the United States. One ton of 2,345 pounds of run of furnace pig iron. The quantities of all the materials and the costs of ore, coal, and coke are the actual quantities and costs of the particular materials used. A detailed analysis of the cost of the limestone used could not be obtained, but that given is of a limestone produced in the same locality.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Timber.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 5,408 pounds of iron ore.	\$1.347	\$0.351	\$0.149	\$0.007			\$0.014	\$1.861
Production of 1,006 pounds of limestone.	.106	.014	.023	.001	\$0.136		.139	.400
Production of 7,576 pounds of bituminous coal.	3.017	.121	.348	.006	.152	\$0.008		4.364
Conversion of above coal into 4,004 pounds of coke.	.713	.027	.083	.002	.003			1.001
Production of 23 pounds of clinder, scrap, etc. (See below.)								
Conversion of above materials into 2,345 pounds pig iron.	1.516	.060	.355	.034				2.461
Total.	7.588	.288	1.121	.052	.300	.008	.219	9.627
of above 23 pounds of clinder, scrap, etc., only the total of which can be given.								.007
Total cost of one ton of pig iron.								9.634

SUMMARY OF THE ABOVE.

Cost of ore, limestone, coal, and coke.	\$7.106
Cost of direct labor in producing the above materials.	\$5.732
Per cent. of cost of direct labor in producing the above materials.	81
Cost of process of conversion.	\$2.461
Cost of direct labor in process of conversion.	\$1.516
Per cent. of cost of direct labor in process of conversion.	74
Cost of one ton of pig iron.	\$9.634
Cost of direct labor in one ton of pig iron.	\$7.248
Per cent. of cost of direct labor in one ton of pig iron.	75

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Southern district of the United States. One ton of 2,240 pounds of run of furnace pig iron. The quantities of all the materials and the costs of ore, coal, and coke are the actual quantities and costs of the particular materials used. A detailed analysis of the cost of limestone could not be obtained, but that given is from an establishment having a total cost approximately the same.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Timber.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 5,131 pounds of iron ore.	\$1.248	\$0.053	\$0.069	\$0.000	\$0.573	.....	\$0.011	\$1.983
Production of 1,340 pounds of limestone.	.141	.019	.030	.002	.150	.....	.049	.891
Production of 6,621 pounds of bituminous coal.	2.609	.070	.099	.003	.....	\$0.023	.098	2.902
Conversion of above coal into 2,973 pounds of coke.	.872	.....	.137	.004	.457	.....	.661	2.131
Production of 31 pounds of cinder, scrap, etc. (See below.)	.....	.....	.....	.....	.....	.....	.....	.....
Conversion of above materials into 2,240 pounds pig iron.	2.088	.209	.879	.017	.....	.....	.....	2.103
Total	6.058	.351	1.234	.035	1.180	.023	.819	10.600
Cost of above 31 pounds of cinder, scrap, etc., only the total of which can be given .....	.....	.....	.....	.....	.....	.....	.....	.010
Total cost of one ton of pig iron .....	.....	.....	.....	.....	.....	.....	.....	10.610

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal, and coke	\$7.407
Cost of direct labor in producing the above materials	\$4.870
Per cent. of cost of direct labor in producing the above materials	66
Total cost of process of conversion	\$3.193
Cost of direct labor in process of conversion	\$2.088
Per cent. of cost of direct labor in process of conversion	65
Total cost of one ton of pig iron	\$10.610
Cost of direct labor in one ton of pig iron	\$6.938
Per cent. of cost of direct labor in one ton of pig iron	66

COST OF DIRECT LABOR, ETC., IN ONE TON OF PIG IRON.

[Great Britain. One ton of 2,240 pounds of Bessemer pig iron. The quantities of all the materials and the costs of limestone, coal, and coke are the quantities and costs of the particular materials used. A detailed analysis of the cost of the ore used could not be obtained, but that given is of an ore produced in the same locality.]

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Timber.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 3,944 pounds of iron ore.	\$0.662	\$0.019	\$0.143	\$0.023	\$3.205	.....	\$1.739	\$5.791
Production of 724 pounds of limestone.	.125	.....	.013	.....	.032	.....	.....	.170
Production of 3,671 pounds of bituminous coal.	1.601	.084	.237	.048	.....	\$0.257	.....	2.227
Conversion of above coal into 2,717 pounds of coke.	.338	.030	.230	.....	.....	.....	.....	.598
Production of 262 pounds of cinder, scrap, etc. (See below.)	.....	.....	.....	.....	.....	.....	.....	.....
Conversion of above materials into 2,240 pounds pig iron.	.603	.015	.580	.012	.....	.....	.....	1.210
Total	3.329	.148	1.203	.083	3.237	.257	1.739	9.996
Cost of above 262 pounds of cinder, scrap, etc., only the total of which can be given .....	.....	.....	.....	.....	.....	.....	.....	.210
Total cost of one ton of pig iron .....	.....	.....	.....	.....	.....	.....	.....	10.216

SUMMARY OF THE ABOVE.

Total cost of ore, limestone, coal, and coke	\$8.796
Cost of direct labor in producing the above materials	\$2.726
Per cent. of cost of direct labor in producing the above materials	31
Total cost of process of conversion	\$1.210
Cost of direct labor in process of conversion	\$0.603
Per cent. of cost of direct labor in process of conversion	50
Total cost of one ton of pig iron	\$10.216
Cost of direct labor in one ton of pig iron	\$3.329
Per cent. of cost of direct labor in one ton of pig iron	33

In order to render the examination and comparison of the various points in the preceding tables more easy, the figures have been drawn off in a different form, which combines all the establishments into a single table for each material and stage of the work. These tables follow:

PRODUCTION OF THE IRON ORE NECESSARY FOR ONE TON OF PIG IRON.

Kind of iron.	Quantity of ore (pounds).	Cost.					Total.
		Direct labor.	Officials and clerks.	Supplies, repairs, and taxes.	Transport to point where used.	Difference between foregoing actual costs and costs as charged by blast furnace.	
NORTHERN DISTRICT, U. S.							
Run of furnace.....	5,810	\$4.433	.....	\$0.529	\$0.056	\$0.727	\$5.655
Bessemer.....	3,088	1.903	\$0.050	.704	2.045	2.941	8.413
Bessemer.....	3,640	2.537	.121	.804	2.531	2.981	8.974
Bessemer.....	3,088	2.123	.146	.873	4.525	1.678	10.337
Bessemer.....	3,685	2.357	.006	.779	\$1.732	\$4.814	\$9.777
Foundry.....	4,234	1.278	.....	2.278	.....	\$1.792	\$5.445
Hot blast charcoal.....	4,198	2.010	.....	.....	2.711	\$2.323	7.044
SOUTHERN DISTRICT, U. S.							
Run of furnace.....	5,818	2.820	.....	.174	.779	.173	3.948
Run of furnace.....	5,072	1.234	.053	.007	.008	.011	1.309
Run of furnace.....	4,005	2.111	.179	.008	.534	.203	3.417
Run of furnace.....	5,404	1.847	.051	.149	.....	.014	1.961
Run of furnace.....	5,121	1.246	.053	.006	.673	.011	1.923
GREAT BRITAIN.							
Bessemer.....	3,944	.002	.010	.106	5.306	1.730	5.791

a Railway charges only.

b Includes considerable for water transportation, which is not separable.

c Includes everything but direct labor and transport to point where used.

PRODUCTION OF THE LIMESTONE NECESSARY FOR ONE TON OF PIG IRON.

Kind of iron.	Quantity of limestone (pounds).	Cost.					Total.
		Direct labor.	Officials and clerks.	Supplies, repairs, and taxes.	Transport to point where used.	Difference between foregoing actual costs and costs as charged by blast furnace.	
NORTHERN DISTRICT, U. S.							
Run of furnace.....	4,538	\$0.526		\$0.121	\$0.040	\$0.001	\$0.718
Bessemer.....	796	.112	\$0.001	.002	.228	.003	.346
Bessemer.....	1,040	.150	.001	.002	.188	.033	.373
Bessemer.....	903	.124	.006	.006	.215	.077	.430
Bessemer.....	846	.136	.001	.002	.254	.028	.431
Foundry.....	1,800	.000			.008	\$1.113	.379
Hot blast charcoal.....	153	.003			.014		.017
SOUTHERN DISTRICT, U. S.							
Run of furnace.....	871	.127		.025		.003	.235
Run of furnace.....	1,104	.123	.017	.027	.120	.028	.324
Run of furnace.....	1,773	.283	.003	.006	.158	.007	.463
Run of furnace.....	1,000	.106	.014	.024	.128	.138	.406
Run of furnace.....	1,340	.141	.010	.033	.180	.040	.391
GREAT BRITAIN.							
Bessemer.....	794	.126		.010	.002		.178

a Includes everything but direct labor and transport to point where used.

PART I.—COST OF PRODUCTION.

85

PRODUCTION OF THE COAL NECESSARY FOR ONE TON OF PIG IRON.

Kind of iron.	Quantity of bituminous coal (pounds).	Cost.					Total.
		Direct labor.	Officials and clerks.	Supplies, repairs, and taxes.	Transport to point where used.	Difference between foregoing actual costs and costs as charged by blast furnace.	
NORTHERN DISTRICT, U. S.							
Run of furnace.....	1,797	\$2.358		\$0.349	\$0.707	\$0.268	\$2.687
Bessemer.....	2,946	.539		.983			.093
Bessemer.....	4,513	.954	\$0.033	.250		.131	\$1.429
Bessemer.....	2,834	.906	.041	.024			.911
Bessemer.....	2,123	.703	.012	.200	.048	.001	.964
Foundry.....	2,614	.728				\$.179	.888
Hot blast charcoal.....	(c)	1.786			1.786	d. 238	2.810
SOUTHERN DISTRICT, U. S.							
Run of furnace.....	6,196	2.446	.084	.236		.177	2.893
Run of furnace.....	5,764	2.363	.069	.109	.874	.437	3.443
Run of furnace.....	3,863	1.025	.017	.077		.346	1.465
Run of furnace.....	7,578	3.617	.121	.364	.153		4.254
Run of furnace.....	6,621	2.600	.070	.125		.066	2.863
GREAT BRITAIN.							
Bessemer.....	2,671	1.001	.064	.543			2.227

a There is here included 2.6 cents, the cost of 45 pounds of coal not converted into coke which cannot be distributed through the several items of cost.

b Includes everything but direct labor.

c Wood, 2.38 cords.

d Includes everything but direct labor and transport to point where used.

CONVERSION OF COAL INTO THE COKE NECESSARY FOR ONE TON OF PIG IRON

Kind of iron.	Quantity of coke (pounds).	Cost.					Total.
		Direct labor.	Officials and clerks.	Supplies, repairs, and taxes.	Transport to point where used.	Difference between foregoing actual costs and costs as charged by blast furnace.	
NORTHERN DISTRICT, U. S.							
Run of furnace.....	2,960	\$0.615		\$0.923		\$0.000	\$0.590
Bessemer.....	2,269	.437	\$0.023	.290	\$2.043	.278	2.981
Bessemer.....	3,168	.558	.030	.071	1.973		2.632
Bessemer.....	1,929	.302	.009	.052	.582	.035	.980
Bessemer.....	2,226	.414	.031	.018	1.509	.299	2.181
Foundry.....	2,468	.348			3.702	a 1.224	5.274
Hot blast charcoal.....	(b)	1.600			1.600	a. 210	2.510
SOUTHERN DISTRICT, U. S.							
Run of furnace.....	2,374	.373	.068	.062		.571	1.294
Run of furnace.....	2,664	.628		.346		.926	.900
Run of furnace.....	2,337	.329	.004	.048	.873	1.455	2.799
Run of furnace.....	4,094	.712	.027	.056	.082	.067	.943
Run of furnace.....	2,973	.573		.141	.487	.061	2.181
GREAT BRITAIN.							
Bessemer.....	2,717	.336	.030	.230			.596

a Includes everything but direct labor and transport to point where used.

b Charcoal, 100 bushels.

REPORT OF THE COMMISSIONER OF LABOR.

CONVERSION OF THE MATERIALS INTO ONE TON (2,240 POUNDS) OF PIG IRON.

Kind of iron.	Cost.			
	Direct labor.	Officials and clerks.	Supplies, repairs, and taxes.	Total.
NORTHERN DISTRICT, U. S.				
Run of furnace.....	\$1,505	\$2,175	\$2,538	\$1,260
Bessemer.....	1,440	137	345	1,922
Bessemer.....	1,534	320	941	2,795
Bessemer.....	1,155	151	554	2,859
Bessemer.....	1,585	350	475	2,410
Foundry.....	1,150		\$, 641	1,800
Hot blast charcoal.....	1,425		\$, 238	1,663
SOUTHERN DISTRICT, U. S.				
Run of furnace.....	1,324	.080	.180	1,584
Run of furnace.....	1,737	.154	.741	2,632
Run of furnace.....	.505	.170	.094	1,450
Run of furnace.....	1,816	.056	.589	2,461
Run of furnace.....	2,000	.208	.095	2,303
GREAT BRITAIN.				
Bessemer.....	.002	.015	.002	1,210

a Includes everything but direct labor.

TOTAL COST OF ONE TON OF PIG IRON FROM THE MINING OF THE MATERIALS TO THE FINISHED PRODUCT, INCLUSIVE.

Kind of iron.	Direct labor.	Officials and clerks.	Supplies, repairs, and taxes.	Transport to point where used.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
NORTHERN DISTRICT, U. S.						
Run of furnace.....	\$0, 448	\$0, 175	\$1, 552	\$1, 087	\$1, 101	\$12, 971
Bessemer.....	4, 413	.220	1, 350	5, 316	3, 923	\$15, 281
Bessemer.....	5, 733	.510	2, 108	4, 092	3, 134	\$16, 538
Bessemer.....	5, 589	.527	1, 510	5, 323	1, 790	14, 618
Bessemer.....	5, 274	.306	1, 474	\$ 2, 543	\$ 5, 063	\$18, 523
Foundry.....	2, 701			6, 040	2, 944	13, 645
Hot blast charcoal.....	6, 757			6, 311	2, 180	20, 207
SOUTHERN DISTRICT, U. S.						
Run of furnace.....	7, 238	.191	.067	.770	1, 002	9, 003
Run of furnace.....	5, 864	.285	1, 220	1, 770	.842	9, 161
Run of furnace.....	4, 312	.453	1, 233	1, 555	2, 071	9, 623
Run of furnace.....	7, 505	.200	1, 181	.980	.319	\$ 9, 624
Run of furnace.....	6, 966	.381	1, 292	1, 180	.319	\$10, 010
GREAT BRITAIN.						
Bessemer.....	1, 329	.145	1, 542	2, 237	1, 730	\$16, 210

a Includes 6.2 cents, the cost of 21 pounds of cinder, scrap, etc., only the total cost of which can be given.

b Includes 2.0 cents, the cost of 45 pounds of bituminous coal, only the total cost of which can be given.

c For the iron ore railway charges only are here included.

d For the iron ore a considerable sum for water transportation is here included.

e Includes 7.1 cents, the cost of 29 pounds of cinder, scrap, etc., only the total cost of which can be given.

f Includes everything but direct labor and transport to point where used.

g Includes 6.7 cents, the cost of 23 pounds of cinder, scrap, etc., only the total cost of which can be given.

h Includes one cent, the cost of 21 pounds of cinder, scrap, etc., only the total cost of which can be given.

i Includes 21 cents, the cost of 203 pounds of cinder, scrap, etc., only the total cost of which can be given.

PER CENT. OF COST FOR DIRECT LABOR IN ONE TON OF PIG IRON FROM THE MINING OF THE MATERIALS TO THE FINISHED PRODUCT, INCLUSIVE.

Kind of iron.	Per cent. that cost for direct labor is of total cost in—		
	Producing the materials.	Converting the materials into pig iron.	Both processes.
NORTHERN DISTRICT, U. S.			
Run of furnace	67	66	66
Bessemer	23	77	36
Bessemer	31	65	36
Bessemer	36	62	36
Bessemer	27	69	32
Furnace	31	64	37
Hot blast charcoal	37	72	43
SOUTHERN DISTRICT, U. S.			
Run of furnace	73	63	73
Run of furnace	64	66	64
Run of furnace	48	41	45
Run of furnace	61	74	79
Run of furnace	68	65	66
GREAT BRITAIN.			
Bessemer	31	66	33

The most apparent thing in the preceding tables is the complete lack of agreement between the facts for the different establishments. Yet it must be remembered the figures are not estimates nor based on estimates, but are worked out from the actual accounts of the concerns for a definite period, usually a year. In the quantities of materials used there is the least variation in ore—the five establishments producing Bessemer using from 3,640 to 3,944 pounds. For the run of furnace establishments the range is from 4,695 to 5,818 pounds. But in limestone, from 724 to 1,050 pounds are used for Bessemer and from 971 to 4,528 pounds for run of furnace. Passing by the coal, where we see from 2,824 to 4,513 pounds used for Bessemer iron, and 3,862 to 6,797 pounds for run of furnace, and considering coke, the resulting product, we find from 1,939 to 2,236 pounds sufficient for Bessemer and from 2,327 to 3,990 pounds necessary for run of furnace. The larger quantities used in the southern establishments is what we might expect from earlier tables where this was more fully brought out (see page 65). Such wide differences in the necessary quantities of materials and consequently in cost of labor are not likely to be more than partially overcome in the future, since they are due to the relative purity or comparative inherent value of each for the purpose. In the several items of cost in ore, limestone, coal, and coke, we see extraordinary differences. Of course these costs are for differing quantities, and if we turn to the general tables on production, I to XI, where hundreds of establishments are treated, nothing is more marked than the fact that there is not, as yet, a scientific determination of the necessary expenditures in labor, in administration, or in the different classes of supplies in the production of these materi-

The cost of the above processes is not distinguished from the variable charges of transportation. The variable costs exclusive of fuel from a comparison of the cost of transportation from a still nearer in. To some extent it may be said that the variable costs are in a way. In the matter of transportation to some extent the cost for each of the different materials is of the same establishment as the variable costs. The variable costs are the same. In the last of the above figures a lower cost for fuel and the cost for direct labor is of the total cost of the iron in producing the materials in supporting the materials and the iron and in both processes combined. The cost of the transportation and for labor in producing the materials for the furnace and in the iron is from 10 to 15 per cent of the total cost of the materials and in the cost for fuel of furnace iron. This is a very high cost of the cost of the iron. The advantage is to labor and materials and the iron. In the conversion of the materials and the iron the two sections seem to be more evenly balanced. However, there are the two disagreements in these results that it is hard to believe that can be easily used in is generally representative, for the accuracy of the cost for direct labor it for any other of the items considered.

COST OF THE IRON, ETC., IN PREVIOUS YEARS.

The Department has made considerable effort to secure facts relating to the cost of making pig iron and in the past, but these efforts have not been attended with very satisfactory success: yet what it has been able to find is given hereafter. The sources from which the tables are drawn are stated in the appropriate places for each showing. The earliest period given is 1848.

COST OF MAKING PIG IRON IN WALES IN 1848.

[This and the succeeding tables in the first two on the cost of producing iron on the Schuylkill river, Pa., and in the second on the cost of producing iron in Pennsylvania, are from documents relating to the manufacture of iron in Pennsylvania presented in detail at the convention of iron masters which met in Philadelphia on the 20th of December 1848. Those relating to the cost of producing iron in Wales, Scotland, etc., are also appended to the report of the secretary of the treasury made December 2, 1849, as "L—No. 28." To secure clearness the form of presentation has been altered and various verbal changes made. Any peculiarities of inclusion, exclusion, or otherwise are part of the original.]

Elements of cost.	Cost.
Cost of 1 ton of clay ironstone.....	\$2.422
Cost of 1 ton of cinder.....	1.211
Cost of 0.75 ton of red hematite ore from Whitehaven, at \$5.329 per ton.....	3.997
Cost of 1 ton of coal for coking, at 26.9 cents per ton.....	2.907
Cost of 0.85 ton of coal for the engine and hot blast, at 49.9 cents per ton.....	.424
Cost of coking.....	.484
Cost of 0.50 ton of limestone, at 72.7 cents per ton.....	.363
Wages.....	1.452
General expenses.....	1.452
Cost at the furnace per ton.....	14.714

At Merthyr the above limestone costs about 36.3 cents per ton, but along the valley above Newport it costs \$1.09 per ton: 72.7 cents is given as the average. In some places they use the blast furnace cinder

for a flux instead of limestone because of the high price of the latter. No account is taken of that, as the loss in the quality of the iron is more than the gain by using the cinder.

As the price of the above hematite ore may be doubted by some persons the items of cost are given as follows:

ANALYSIS OF COST OF ABOVE ORE.

Elements of cost.	Cost.
The price on board the vessel at Whitehaven, reduced in August, 1849, from \$2.96 per ton to	\$2.064
Freight from Whitehaven to Cardiff	1.696
Freight by railroad from Cardiff to Merthyr, 25 miles .....	.606
Loading and unloading railroad cars .....	.121
Loading and unloading tramway cars which convey it from the railroad to the furnace ..	.242
Cost at the furnace per ton	\$3.329

COST OF MAKING ANTHRACITE PIG IRON IN WALES IN 1848.

Cost of 2 tons clay ironstone, at \$2.422 per ton	\$1.844
Cost of 0.75 ton of hematite ore, at \$5.329 per ton	2.997
Cost of 2 tons of coal in the furnace, at \$1.211 per ton	2.422
Cost of 1.50 ton of coal for steam, hot blast, roasting ore, etc., at \$1.211 per ton	1.817
Cost of 0.50 ton of limestone, at 72.7 cents per ton .....	.363
Wages	2.180
General expenses	1.453
Cost at the furnace per ton	17.076

COST OF MAKING PIG IRON IN SCOTLAND IN 1848.

Cost of 2 tons of raw coal, at 96.9 cents per ton	\$1.938
Cost of 3.50 tons of raw ore (equal to 1.75 ton roasted), at \$1.211 per ton	4.239
Cost of 0.3 ton of limestone, at \$1.696 per ton .....	.509
Cost of 1 ton of coal for engine and hot blast .....	.484
Wages	1.211
General expenses	1.872
Cost at the furnace per ton	9.783

COST OF CONVERTING PIG IRON INTO [IRON] RAILS IN WALES IN 1848.

COST FROM PIG IRON TO PLATE METAL.

Cost of 1.13 ton of pig iron, at \$14.714 per ton (see table above for coke pig iron in Wales) ..	\$16.527
Cost of 0.50 ton of coke for fuel, at \$2.18 per ton	1.090
Wages of refiner and helper .....	.222
Wages of breakers and metal wheelers .....	.035
Cost of plate metal per ton	17.874

COST FROM PLATE METAL TO PUDDLED BAR.

Cost of 1.06 ton of plate metal, at \$17.974 per ton	\$19.052
Cost of 0.75 ton of coal for puddling, at 96.9 cents per ton .....	.727
Cost of 0.33½ ton of coal for engine, at 48.5 cents per ton .....	.162
Wages of puddler and helper	1.453
Wages of squeezer .....	.081
Wages for rolling .....	.162
Wages of extra train boy, at 52.5 cents per day .....	.018
Wages of 2 extra drag-out boys, at 23.2 cents each per day .....	.016
Wages of 2 weighmen, at 42.4 cents each per day .....	.028
Wages of 1 cinder wheeler, at 50.5 cents per day .....	.017
Wages of ash fillers .....	.003
Cost of puddled bar per ton	21.719

COST FROM PUDDLED BAR TO REHEATED AND ROLLED TOPS AND BOTTOMS.

Elements of cost.	Cost.
Cost of 1.10 ton of puddled bar iron, at \$21.719 per ton	\$23.801
Cost of 0.90 ton of coal for furnace, at 90.9 cents per ton .....	.818
Cost of 0.334 ton of coal for engine, at 48.5 cents per ton .....	.313
Wages for rolling .....	.414
Wages for heating	
Cost of reheated and rolled tops and bottoms per ton	25.351
Cost of rail pile (consisting of one-fourth reheated and rolled tops and bottoms and three-fourths puddled bar) per ton	25.639

COST FROM RAIL PILE TO ROLLED AND FINISHED RAILS.

Cost of 1.10 ton of rail pile, at \$23.620 per ton	\$24.893
Cost of 0.90 ton of coal for furnace, at 90.9 cents per ton .....	.818
Cost of 0.334 ton of coal for engine, at 48.5 cents per ton .....	.313
Wages for cutting, wheeling, and piling .....	.121
Wages of roller .....	.191
Wages for roughing-down .....	.001
Wages for catching .....	.000
Wages of heater and helper .....	.114
Wages of booker-in, at 64.6 cents per day .....	.023
Wages of heave-up at roughing, at 54.5 cents per day .....	.018
Wages of heave-up at finishing, at 56.3 cents per day .....	.013
Wages of catcher at finishing, at 48.5 cents per day .....	.010
Wages of extra helper to charge, at 60.5 cents per day .....	.020
Wages of extra helper to coach, at 60.5 cents per day .....	.020
Wages of 1 sawer and hot straightener, at 68.4 cents per day .....	.023
Wages of 3 sawers and hot straighteners, at 72.7 cents each per day .....	.078
Wages of 1 sawer and hot straightener, at \$1.453 per day .....	.048
Wages of 2 hot filers, at 72.7 cents per day .....	.048
Wages of saw filer .....	.015
Wages for cold straightening .....	.303
Wages for dressing .....	.091
Wages for patching .....	.020
Wages for inspecting .....	.025
General expenses, such as superintendence of mills, wages of engineers, firemen, manous, blacksmiths, cost of firebrick, oil, grease, fuel for smiths, iron and steel to mend tongs, heaters' and puddlers' tools, sand, cinder, and ore to line and repair the furnaces, removal of castings burned and broken	1.453
Cost of completed rails at the mill per ton	25.597

QUANTITIES OF MATERIALS USED IN MAKING ONE TON OF (IRON) RAILS IN WALES IN 1848.

[These quantities are deduced by the Department of Labor from the preceding statements as the necessary amounts entering into one ton of finished rails.]

Materials.	Tons.
Clay ironstone	1.3904
Cinder	1.3504
Red hematite ore	1.0129
Coal for coke	4.0512
Coal for engine and hot blast	1.1478
Limestone .....	.0752

QUANTITIES OF SUCCESSIVE PRODUCTS RESULTING FROM THE CONVERSION OF THE ABOVE MATERIALS INTO RAILS.

[Deduced by the Department, as indicated above.]

Pig iron	1.3904
Paste metal	1.1961
Puddled bar iron	1.1279
Tops and bottoms (made from 0.7735 ton of the puddled bar) .....	.3750
Rail pile (made from the tops and bottoms and 0.2265 ton of the puddled bar)	1.1900
Finished rails	1.0000

PART I.—COST OF PRODUCTION.

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COST OF ROLLING-MILL LABOR IN ONE TON OF IRON [RAILS] IN THE UNITED STATES AND GREAT BRITAIN.

[This table is given substantially as it appears in the volume referred to, as it is impossible to make it harmonious with the preceding tables from which the various items of cost in the central column profess to be drawn. In the original some of these items could not be identified in the earlier tables, and others were manifestly wrong, though not enough so to alter the total materially. Under these circumstances, the only thing to do was to change the sterling into United States money, and present the table as it was found. Attention is also directed to the fact that the plan pursued does not really result in arriving at the total cost of direct labor in converting a quantity of pig iron into one ton of rolled iron. For example, the statement shows the labor cost of puddling the material for a ton of rolled iron [rails] to be \$1.453, but a reference to the preceding tables shows that this sum is the labor cost of puddling in one ton of puddled iron; now it requires 1.1275 ton of puddled iron to produce a ton of rolled iron [rails], so that the true labor cost should be \$1.638. As to how the cost for American labor is arrived at, no information is furnished, and the value of the statement is thereby much lessened.]

Elements of labor.	United States, 1849.	Great Britain.	
		1848.	1849 (Reduced 10 per cent. from 1848).
Wages of puddler and helper.....	\$2.500	\$1.453	\$1.296
Wages for rolling puddled bar.....	.727	.162	.145
Wages for sundry labor [puddle mill].....	.823	.419	.375
Wages for shearing iron for piles.....	.210	.121	.110
Wages for heater and helper.....	.875	.414	.370
Wages for rolling.....	.850	.474	.429
Wages for straightening and finishing.....	1.375	.645	.585
Wages for sundry labor.....	1.283	.661	.603
General expenses, such as superintendence of mills, wages of engineers, firemen, masons, blacksmiths, etc.	1.385	.525	.469
Total.....	11.000	4.174	3.734

COST OF IMPORTING IRON UNDER THE TARIFF OF 1848.

[The charges are practically the average for 10 years of those actually paid by a large importing house.]

Elements of cost.	Cost.
Cost of 1 ton of rails at Merthyr, as shown above.....	\$22.507
Freight from Merthyr to Cardiff.....	.606
Commission for negotiating payment.....	.270
Shipping charges.....	.500
Duty.....	2.250
Insurance.....	.410
Freight.....	2.800
Portage.....	.800
Total.....	42.693

ANALYSIS OF COST OF IRON ORE IN ONE TON OF PIG IRON MADE AT FURNACES ON THE SCHUYLKILL RIVER, PENNSYLVANIA, IN 1849.

Elements of cost.	Cost.		
	Labor.	Other.	Total.
Mining 2.67 tons, at \$1 per ton.....	\$2.67	.....	\$2.67
Hauling 2.67 tons, at 50 cents per ton.....	1.33	.....	1.33
Weighing, etc., 2.67 tons, at 10 cents per ton.....	.2727
Royalty on 2.67 tons, at 40 cents per ton.....	\$1.06	1.06
Total.....	4.27	1.06	5.33

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ANALYSIS OF COST OF COAL IN ONE TON OF PIG IRON MADE AT FURNACES ON THE SCHUYLKILL RIVER, PENNSYLVANIA, IN 1849.

Elements of cost.	Cost.		
	Labor.	Other.	Total.
Mining 2.25 tons, at 90 cents per ton	\$2.02	.....	\$2.02
Lateral railroad transport of 2.25 tons, at 25 cents per ton (labor 12, other 12).	.29	\$0.27	.56
Wear and tear in producing 2.25 tons, at 15 cents per ton (labor 12, other 3).	.27	.07	.34
Incidental labor on 2.25 tons, at 7 cents per ton .....	.16	.....	.16
Railroad transport of 2.25 tons, at \$1.30 per ton (labor 70, other 60).	1.58	1.35	2.93
Royalty on 2.25 tons, at 35 cents per ton .....	.....	.79	.79
Mining operator's profit on 2.25 tons, at 18 cents per ton .....	.....	.40	.40
Interest on 2.25 tons, at 5 cents per ton .....	.....	.11	.11
Total	4.32	2.90	7.31

ANALYSIS OF COST OF LIMESTONE IN ONE TON OF PIG IRON MADE AT FURNACES ON THE SCHUYLKILL RIVER, PENNSYLVANIA, IN 1849.

Quarrying 1 ton	\$0.25	.....	\$0.25
Hauling 1 ton .....	.40	.....	.40
Royalty on 1 ton .....	.....	\$0.10	.10
Total .....	.65	.10	.75

SUMMARY OF COST OF ONE TON OF PIG IRON AT FURNACES ON THE SCHUYLKILL RIVER, PENNSYLVANIA, IN 1849.

Iron ore, 2.67 tons	\$1.27	\$1.06	\$2.33
Coal, 2.25 tons	4.32	2.90	7.31
Limestone, 1 ton .....	.65	.10	.75
Conversion of these materials into 1 ton of pig iron	2.00	.....	2.00
Other blast furnace expenses	1.11	1.00	2.11
Total	12.35	5.15	17.50

COST OF LABOR IN ONE TON OF MERCHANT BAR IRON AT THE WORKS ON THE SCHUYLKILL RIVER, PENNSYLVANIA, IN 1849.

[This iron is supposed to be made from the above analyzed pig iron, costing, as shown, \$17.50 at the mill. Three tons of coal, 3.56 tons of ore, and 1.33 ton of limestone are estimated as necessary to produce the 1.33 ton of pig iron used in making 1 ton of this bar iron. The computations are made on these bases.]

Elements of cost.	Cost.
Mining 3 1/2 tons of ore for the blast furnace, at \$1 per ton	\$3.56
Hauling 3.56 tons of ore for the blast furnace, at 50 cents per ton	1.78
Weighing, etc., 3.56 tons of ore for the blast furnace, at 10 cents per ton .....	.36
Mining 3 tons of coal for the blast furnace, at 90 cents per ton	2.70
Lateral railroad transport of 3 tons of coal for the blast furnace, at 13 cents per ton (labor proportion).	.39
Wear and tear in producing 3 tons of coal for the blast furnace, at 12 cents per ton (labor proportion).	.36
Incidental labor on 3 tons of coal for the blast furnace, at 7 cents per ton .....	.21
Railroad transport of 3 tons of coal for the blast furnace, at 70 cents per ton (labor proportion).	2.10
Quarrying 1.33 ton of limestone for the blast furnace, at 25 cents per ton .....	.33
Hauling 1.33 ton of limestone for the blast furnace, at 40 cents per ton .....	.53
Blast furnace labor converting the materials into 1.33 ton of pig iron	4.14
Mining 2.25 tons of coal for the bar mill, at 90 cents per ton	2.02
Lateral railroad transport of 2.25 tons of coal for the bar mill, at 13 cents per ton (labor proportion).	.29
Wear and tear in producing 2.25 tons of coal for the bar mill, at 12 cents per ton (labor proportion).	.27
Incidental labor on 2.25 tons of coal for the bar mill, at 7 cents per ton .....	.16
Railroad transport of 2.25 tons of coal for the bar mill, at 70 cents per ton (labor proportion), plus error of 22 cents.	1.89
Bar-mill labor converting 1.33 ton of pig iron into 1 ton of merchant bar iron	15.00
Extra bar-mill labor	1.00
Total	37.00

COST OF ANTHRACITE PIG IRON AT A FURNACE IN EASTERN PENNSYLVANIA.

[From Report of Tenth Census, Vol. XX, page 111, where it is given as compiled by William E. B. Baker for The Iron Age.]

Items.	1860.	1870.	1870, Jan. 1.	1877, July 1.	1879, Mar. 1.	1875, Mar. 1.	1876, Mar. 1.	1872.
Cost of ore to the ton of pig iron...	\$11.49	\$8.97	\$9.51	\$7.00	\$9.54	\$11.95	\$14.75	\$11.87
Cost of coal to the ton of pig iron...	5.78	5.14	5.22	4.93	5.79	5.81	7.90	7.45
Cost of limestone to the ton of pig iron.	1.23	1.08	.78	.81	1.01	1.14	2.03	1.86
Cost of [furnace] labor to the ton of pig iron.	2.80	2.35	1.95	2.02	2.54	2.97	3.80	5.11
Cost of general contingencies (a)...	1.40	.96	1.29	1.65	1.73	2.10	2.30	2.80
Cost at furnace bank	22.78	18.51	15.73	17.10	21.61	24.17	31.47	28.41
Add interest on capital on a product of 8,000 tons.	1.00	1.00	1.15	1.28	1.56	1.78	2.30	2.06
Total cost to producer	23.78	19.51	16.88	18.38	23.17	25.95	33.77	30.47

Items.	1872.	1871.	1870.	1869.	1868.	1867.	1866.	1865.
Cost of ore to the ton of pig iron...	\$12.04	\$12.07	\$12.95	\$11.86	\$11.98	\$11.71	\$12.19	\$12.13
Cost of coal to the ton of pig iron...	7.28	6.59	7.05	7.41	7.11	7.44	7.55	8.00
Cost of limestone to the ton of pig iron.	2.04	2.06	2.44	2.14	2.51	2.76	2.63	2.35
Cost of [furnace] labor to the ton of pig iron.	4.99	3.54	3.89	3.88	3.95	3.99	3.46	4.56
Cost of general contingencies (a)...	2.83	2.77	3.67	1.85	2.30	1.96	2.00	2.91
Cost at furnace bank	29.58	26.65	30.81	26.83	26.30	27.99	27.93	33.21
Add interest on capital on a product of 8,000 tons.	1.75	1.82	1.85	1.71	1.65	1.80	1.64	1.61
Total cost to producer	31.33	28.47	32.66	28.54	27.95	29.79	29.57	34.82

Items.	1864.	1863.	1862.	1861.	1860.	1859.	1858.	1857.
Cost of ore to the ton of pig iron...	\$9.12	\$7.48	\$7.00	\$7.25	\$7.45	\$7.08	\$7.95	\$7.75
Cost of coal to the ton of pig iron...	5.41	2.42	3.68	3.29	2.40	2.20	4.05	3.00
Cost of limestone to the ton of pig iron.	1.98	1.20	1.11	1.17	1.21	1.15	1.18	1.14
Cost of [furnace] labor to the ton of pig iron.	2.85	2.97	1.87	1.97	1.87	1.82	2.10	2.30
Cost of general contingencies (a)...	1.00	2.25	2.67	2.86	2.83	2.83	2.73	2.10
Cost at furnace bank	20.37	16.53	16.11	16.61	16.85	16.74	17.73	17.24
Add interest on capital on a product of 8,000 tons.	1.50	1.40	1.57	1.57	1.36	1.28	1.22	1.47
Total cost to producer	21.87	17.93	17.68	18.18	18.21	17.43	18.95	18.71

Items.	1856.	1855.	1854.	1853.	1852.	1851.	1850.
Cost of ore to the ton of pig iron	\$7.50	\$7.51	\$8.65	\$5.97	\$5.55	\$5.44	\$5.75
Cost of coal to the ton of pig iron	3.00	4.82	3.53	2.22	2.05	2.36	2.79
Cost of limestone to the ton of pig iron.	1.16	1.25	1.34	1.06	1.06	.96	.93
Cost of [furnace] labor to the ton of pig iron.	2.58	2.85	2.45	2.80	2.92	1.81	2.23
Cost of general contingencies (a)....	1.91	2.62	1.89	2.62	2.03	1.83	1.05
Cost at furnace bank	16.15	18.97	16.90	14.85	14.70	12.30	14.25
Add interest on capital on a product of 8,000 tons.	1.21	1.29	1.37	1.22	1.15	1.05	1.05
Total cost to producer	17.36	20.26	18.27	16.07	15.85	13.35	15.30

Tons of ore used to make one ton of pig iron, average of 10 years	2.770
Tons of coal used to make one ton of pig iron, average of 10 years	1.750
Tons of limestone used to make one ton of pig iron, average of 10 years815

a Presumably this relates to the blast furnace only.

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November, 1885. Mr. Henry S. Eckert, president of the Eastern Pig Iron Association, and Mr. De B. Randolph Keim, secretary, in replying for the Association to a letter of the honorable secretary of the Treasury, sent on September, 1885, stated (a) that during the three years last past the cost of production of pig iron had varied from \$17 to \$20 per ton of 2,240 pounds. This letter also contains the following valuable statements:

Cost of Labor.—The actual cost of furnace labor, including handling materials and product, with superintendence, at a well managed furnace will average \$2 to \$2.50 per ton of iron. Taking \$2 as a standard, the laws would be about as follows:

1. Laborer, removing debris door.....	\$0.30
2. Laborer, removing door.....	.30
3. Laborer, materials into furnace.....	.70
4. Laborer, removing gas and handling iron.....	.20
5. Laborer, materials, pigmen, laborers, etc.).....	.50
	<hr/>
	2.00

The wages range from 11 cents per hour for unskilled labor to \$2.00 per day for skilled mechanics.

Operating Expenses.—The principal item of operating expenses is fuel. The other items are incidentals and repairs. Incidental repairs include daily repairs to furnace and machinery, as well as repairs to cars or horses and oil for lubrication and light, etc. Repairs are made every month, but will average 75 cents per ton

It is generally applied to large items, always required when an furnace is to be placed out of blast at the close of the year. The lining of the furnace with fire brick and a thorough examination of the machinery is always necessary at the end of a blast, and the furnace has to be started up again. The amount of repairs is very much, and can never be determined till the furnace is again in blast. Then the length of the blast is usually about four or five years, and of course the amount of repairs when the repairs are chargeable varies with the length of the blast. For these reasons the amount per ton due to repairs is not estimated while the furnace is in blast, but is estimated at the close of the year at 20 cents per ton for this item.

...the Secretary's request for itemized expendi-
...the actual cost of making pig iron at 4
...the country east of the Alleghany mountains,
...establishments in the districts where
...the years 1882, 1883, and 1884:

	Incidentals.	Repairs.	Total cost.
20.43			\$17.30
18.70		\$0.69	18.70
18.95		.19	18.95
20.16		.50	20.16

... at the works, and does not
... commissions, interest, taxes,
... ..

the revision of the tariff, February

PART I.—COST OF PRODUCTION.

While it will be seen that the direct charge for labor at the furnace ranges from \$1.82 to \$2.37 per ton of iron, it must be emphatically stated that the other items—fuel, ore, limestone, and repairs—are very largely, perhaps 80 per cent., made up of labor.

Messrs. J. B. Sargent, of New Haven, Conn., Edward J. Shriver, of New York, Graham McAdam, of New York, Lindley Vinton, of the Vinton Iron Works, Indianapolis, M. D. Harter, of the Aultman & Taylor Company, Mansfield, Ohio, John H. Miller, of the Schreidt & Miller Company, Mansfield, Ohio, Isaac H. Harter, of the Peerless Reaper Company, Canton, Ohio, W. G. Gibbons, of Wilmington, Del., and others, in a letter to the honorable secretary of the treasury, dated December 21, 1885, (a) made the following statements relative to the cost of converting pig iron into bars and rails in America and in England, the statements being for the latter part of 1885:

COST PER TON OF MAKING BAR IRON AND STEEL RAILS.

	In America.	In England.
Medium bar iron sells at.....	\$23.84	\$23.10
Gray forge pig iron sells at.....	15.00	11.64
Converting pig iron into bars.....	20.64	17.46
Steel rails sell at.....	24.00	24.50
Bessemer pig iron sells at.....	20.50	18.70
Converting pig iron into rails.....	12.00	14.80

The English quotations used in the foregoing statement are for South Staffordshire bar of the quality usually marketed in this country alongside our medium bar, and for pig of corresponding quality. The gentlemen above referred to, in their letter to the honorable secretary, criticised the following table given by the Iron and Steel Association.

Labor in producing raw materials.....	\$10.26
Labor in transporting raw materials.....	1.78
Labor at furnace, including repairs.....	1.91
Total cost of labor.....	13.95
Taxes, insurance, commissions, office expenses, interest, travelling expenses, royalties, etc.	5.23
Total cost of ton of pig iron.....	19.17
Percentage of labor cost to total cost.....	73

Reviewing this statement, they say:

The effort here is to sustain the theory that pig iron is all labor, but nothing can excuse such a deliberate perversion of fact as is contained in these few figures. * * * According to the census of 1880 when wages were much higher the actual wages paid for mining this ore were \$2.81 and for the coal \$1.22. Adding 40 cents wages paid for quarrying limestone we get the total labor for producing raw material as \$4.43 to one ton of pig iron instead of \$10.26 as in the table.

Quoting a statement from the Iron Age that one-half cent per mile is a fair allowance for transportation they say:

If this estimate is correct, the labor for transporting raw material

a See report of the secretary of the treasury on the revision of the tariff, February 16, 1886, pages 521 to 530.

REPORT OF THE COMMISSIONER OF LABOR.

ought not to be put down at over 40 cents in most cases. The item of labor at furnace is fairly reasonable, but an allowance of \$5.22, or 25 per cent., for et ceteras would indicate a most extravagant business, and is \$2 more than the highest estimate that has ever been made. Remodelling our table by the new light we have found, it will read (taking economic cost in the country at large) as follows:

Labor of mining iron ore.....	\$2.51
Labor of mining coal.....	1.22
Labor of mining limestone.....	.40
Labor in transportation.....	.40
Labor at furnace and repairs.....	1.91
Total labor.....	6.74
Ordinary allowance of et ceteras.....	3.00
Actual economic cost.....	9.74
Or, bringing et ceteras up to the association's statement.....	11.96

To get the association's result we are obliged to add:

Royalties on ore and profit of ore mining companies.....	\$4.19
Royalties on coal and profit of coal mining companies.....	1.29
Profit on limestone.....	.35
Profit of transportation companies.....	1.38
Total cost.....	19.17
Percentage to labor.....	35+
Percentage to railroad.....	7+
Percentage to mine owners.....	30+

The cost of making pig iron at Middlesboro, England, where free competition has forced on mining companies moderate profits, averages \$8.81 per ton, of which \$7.17 is represented by the raw material used, so that it is plain that the higher cost in this country is caused almost wholly by the rack rent paid to mine owners and to railroads carrying raw materials, and that these two classes are the real beneficiaries of the excessive tariff that, starting with pig as a basis, raises the values of iron and steel products to so high a level that we are shut out from the trade of the world. If, to the actual labor paid for mining the raw material, as given positively by the census—\$1.35 per ton of ore, which the statistics of Mr. Swank tell us averages 55 per cent. metallic iron, and 70 cents per ton of coal, of which 1½ tons are used to smelt a ton of pig—and to the labor of transportation, as estimated by the protectionist Iron Age, we add a profit of 20 per cent., the expenses at the furnace itself, and the sundry charges, we find that the real cost of the pig will vary from \$10.50 to \$13, according as the business is conducted under economic management and with improved plant, or the reverse. This exactly agrees with what is known of the cost of producing by such companies as the Thomas, Colebrook, or Cornwall, of Pennsylvania, which mine their own ore, but buy and transport coal at high tariff rates; by the Virginia furnaces, which buy ore comparatively cheap, because there are few of them in relation to the neighboring supply of raw material, and by the furnaces in Alabama and Tennessee, which have the advantage of ore and coal lying side by side, as well as that of being as yet in a position to dictate terms to the land barons who own the mines, even where they must buy their material, instead of digging it on their own property. Both conditions of ownership of mines and proximity of fuel to ore are combined in the case of certain furnaces in the Hooking Valley, Ohio, which it is now said can make iron at a cost of \$10 a ton.

The foregoing statements are brought in here simply to show the difficulty of securing cost of production, when the producers of pig iron, even, cannot agree. The advantage which the Department has had over the parties who made the statements just quoted and the Iron and Steel Association is that the agents of the Department have made up the statements used by it from the books of account, without any desire to reach any other conclusion than that of the exact truth, independent of estimates of individual men. The desire in the statements quoted has no doubt been to reach the truth, but the parties have been obliged to depend in too many instances upon estimates rather than upon actual statements from accounts.

PRODUCTION OF RUN OF FURNACE PIG IRON (BESSEMER AND FOUNDERY) AT A WELL KNOWN ESTABLISHMENT IN GREAT BRITAIN.

[This report is not included in the general tables, page 25, *et seq.*, as it lacks certain features essential in those presentations, notably the aggregates of production for a fixed period. In other respects its fullness is such as to make it valuable. The figures are based on prices prevailing in 1887, and probably would, for 1889, be 10 per cent. higher for all wages paid. The original does not present such an appearance of minute specification in costs. The sums are there given in even pence, shillings, or pounds, and the appearance of extreme exactness is produced by the conversion into United States money. It is a large establishment.]

Furnaces:

Height: From 40 to 60 feet.
Greatest diameter: From 15 to 18 feet.
Cubic contents: From 4,120 to 8,730 cubic feet.
Open or closed top: Closed.
Fore hearth or closed front: Both.

Blowing engines:

Number: Four.
Diameter of blowing cylinders: From 81 to 120 inches.
Length of stroke: From 7 to 9½ feet.

Steam boilers, etc.:

Number: Twenty-three.
Length: From 24 to 30 feet.
Diameter: From 5½ to 9 feet.
Total heating surface: 14,112 square feet.
Kind of hoists used: Vertical.
Power used to operate hoists: Steam and water balance.
Kind of hot blast apparatus: Pipe stoves.
Number of hot blast apparatus: Two per furnace.
Extent of use of water power: For one hoist only.
Fuel for blowing engine boilers and hot blast apparatus: Furnace gases wholly.

Coal:

Kind: Raw coal.
Source of supply: Furnace's own mines.
Miles distance from works: 5.
Means of transport: Railway.
Proportion mined by owners of the furnaces: Nearly all.
Proportion bought: Trifling.
Royalty paid to state: Nothing.
Royalty paid to owners of soil: About 14.2 cents per ton.
Quantity used per ton of product: 4,256 pounds.
Labor cost of mining per ton: 97.3 cents.
Total cost per ton including waste: \$1.46.

Ore:

Kind: Blackband, clayband, and hematite.
Location of blackband and clayband mines: 10 to 20 miles from furnaces.
Location of hematite mines: North of England and Spain.
Means of transport: Rail and sea.
Proportion mined by owners of the furnaces: 80 per cent.
Proportion bought: 20 per cent.
Maximum size after breaking: 8 inches.
Royalty paid to state: Nothing.
Royalty paid to owners of soil for clayband: 14.2 cents per ton.

Ore—Concluded.

Royalty paid to owners of soil for blackband: 48.7 cents per ton.
Royalty paid to owners of soil for hematite: 48.7 cents per ton.
Proportions charged for foundry iron: ½ clayband, ½ hematite, ½ blackband.
Proportions charged for Bessemer iron: ½ English, ½ Spanish.
Ore roasted: Clayband.
Coal for roasting per ton of ore: 28 pounds.
Quantity used per ton of product: 4,032 pounds.
Labor cost per ton of mining blackband: \$2.19.
Labor cost per ton of mining hematite: \$1.07½.
Total cost per ton including waste: \$3.59.

Pure limestone:

Source of supply: Furnace's own mines.
Average distance from quarries to works: 24 miles.
Means of transport: Railway.
Proportion quarried by owners of furnaces: All.
Proportion bought: None.
Maximum size after breaking: 6 inches.
Royalty paid to state: Nothing.
Royalty paid to owners of soil: 8.1 cts. per ton.
Quantity used per ton of product: 784 pounds.
Labor cost per ton of quarrying: 48.7 cents.
Total cost per ton including waste: \$1.213.

Concerning workmen:

Masons: 1, at \$7.54, weekly.
Carpenters: 8, at \$4.87 to \$5.84, weekly.
Smiths: 7, at \$4.87 to \$5.84, weekly.
Machinists: 9, at \$5.35 to \$6.32, weekly.
Patternmakers: 2, at \$5.60 to \$6.03, weekly.
Moulders: 12, at \$4.38 to \$5.84, weekly.
At blowing engines: 97.2 cents per shift.
At other engines: 77.1 cents per shift.
At locomotives: 79.1 cents to \$1.034 per shift.
Firemen: 64.9 cents to 73 cents per shift.
Boiler menders: 91.2 cents per shift.
Unloaders: 11, at 64.9 cents per shift.
Engineers: 97.3 cents per day.
Founders: 97.3 cents per day.
Keepers: 93.3 cents per day.
Helpers: 71 cents per day.
Fillers: 81.1 cents per day.
Laborers: 54.7 cents per day.
Men and carts moving material from unloading place to furnace: None; fillers charge railroad cars with barrows.
Ore breakers: Two.
Limestone breakers: None; broken by machine at mine.

COST FROM PUDDLED BAR TO REHEATED AND ROLLED TOPS AND BOTTOMS.

Elements of cost.	Cost.
Cost of 1.19 ton of puddled bar iron, at \$21.719 per ton	\$25.561
Cost of 0.00 ton of coal for furnaces, at 58.9 cents per ton .....	.561
Cost of 0.534 ton of coal for engine, at 48.5 cents per ton .....	.163
Wages for rolling .....	.213
Wages for heating .....	.414
Cost of reheated and rolled tops and bottoms per ton	25.561
Cost of rail pile (consisting of one-fourth reheated and rolled tops and bottoms and three-fourths puddled bar) per ton	22.629

COST FROM RAIL PILE TO ROLLED AND FINISHED RAILS.

Cost of 1.10 ton of rail pile, at \$22.629 per ton	\$24.893
Cost of 0.00 ton of coal for furnaces, at 58.9 cents per ton .....	.561
Cost of 0.534 ton of coal for engine, at 48.5 cents per ton .....	.163
Wages for cutting, wheeling, and piling .....	.181
Wages of roller .....	.101
Wages for roughing down .....	.061
Wages for catching .....	.000
Wages of heater and helper .....	.414
Wages of hooker-in, at 64.6 cents per day .....	.823
Wages of heave-up at roughing, at 54.5 cents per day .....	.616
Wages of catcher at finishing, at 48.5 cents per day .....	.613
Wages of extra helper to charge, at 58.5 cents per day .....	.616
Wages of extra helper to catch, at 60.5 cents per day .....	.629
Wages of 1 sawer and hot straightener, at 68.8 cents per day .....	.622
Wages of 3 sawers and hot straighteners, at 72.7 cents each per day .....	.678
Wages of 1 sawer and hot straightener, at \$1.453 per day .....	.646
Wages of 2 hot filers, at 72.7 cents per day .....	.848
Wages of saw filer .....	.815
Wages for cold straightening .....	.202
Wages for dressing .....	.391
Wages for patching .....	.820
Wages for inspecting .....	.025
General expenses, such as superintendence of mills, wages of engineers, firemen, washmen, blacksmiths, cost of firebrick, oil, grease, fuel for smiths, iron and steel to mend tools, heaters' and puddlers' tools, sand, cinder, and ore to line and repair the furnaces, removal of castings burned and broken	1.463
Cost of completed rails at the mill per ton	22.597

QUANTITIES OF MATERIALS USED IN MAKING ONE TON OF [IRON] RAILS IN WALES IN 1848.

[These quantities are deduced by the Department of Labor from the preceding statements as the necessary amounts entering into one ton of finished rails.]

Materials.	Tons.
Clay ironstone	1.3544
Cinder	1.2504
Red hematite ore	1.0123
Coal for coke	6.6612
Coal for engine and hot blast	1.1678
Limestone .....	.6732

QUANTITIES OF SUCCESSIVE PRODUCTS RESULTING FROM THE CONVERSION OF THE ABOVE MATERIALS INTO RAILS.

(Deduced by the Department, as indicated above.)

Pig iron	1.3544
Plate metal	1.1961
Puddled bar iron	1.1278
Tops and bottoms (made from 2.725 ton of the puddled bar) .....	.5750
Rail pile (made from the tops and bottoms and 0.8250 ton of the puddled bar)	1.1900
Finished rails	1.0000

COST OF ROLLING-MILL LABOR IN ONE TON OF IRON [RAILS] IN THE UNITED STATES AND GREAT BRITAIN.

[This table is given substantially as it appears in the volume referred to, as it is impossible to make it harmonious with the preceding tables from which the various items of cost in the central column profess to be drawn. In the original some of these items could not be identified in the earlier tables, and others were manifestly wrong, though not enough so to alter the total materially. Under these circumstances, the only thing to do was to change the sterling into United States money, and present the table as it was found. Attention is also directed to the fact that the plan pursued does not really result in arriving at the total cost of direct labor in converting a quantity of pig iron into one ton of rolled iron. For example, the statement shows the labor cost of puddling the material for a ton of rolled iron [rails] to be \$1.453, but a reference to the preceding tables shows that this sum is the labor cost of puddling in one ton of puddled iron; now it requires 1 1275 ton of puddled iron to produce a ton of rolled iron [rails], so that the true labor cost should be \$1.633. As to how the cost for American labor is arrived at, no information is furnished, and the value of the statement is thereby much lessened.]

Elements of labor.	United States, 1949.	Great Britain.	
		1848.	1848 (Reduced 10 per cent. from 1848).
Wages of puddler and helper.....	\$2.500	\$1.453	\$1.288
Wages for rolling puddled bar.....	.727	.162	.145
Wages for sundry labor [puddle mill].....	.823	.419	.375
Wages for shearing iron for piles.....	.216	.131	.110
Wages for heater and helper.....	.875	.414	.370
Wages for rolling.....	.854	.474	.429
Wages for straightening and finishing.....	1.375	.545	.485
Wages for sundry labor.....	1.283	.661	.595
General expenses, such as superintendence of mill, wages of engineers, firemen, masons, blacksmiths, etc.	1.385	.533	.480
Total.....	11.000	4.174	3.726

COST OF IMPORTING IRON UNDER THE TARIFF OF 1848.

[The charges are practically the average for 10 years of those actually paid by a large importing house.]

Elements of cost.	Cost.
Cost of 1 ton of rails at Merthyr, as shown above.....	\$22.507
Freight from Merthyr to Cardiff.....	.806
Commission for negotiating payment.....	.270
Shipping charges.....	.580
Duty.....	2.250
Insurance.....	.410
Freight.....	2.500
Portage.....	.500
Total.....	42.683

ANALYSIS OF COST OF IRON ORE IN ONE TON OF PIG IRON MADE AT FURNACES ON THE SCHUYLKILL RIVER, PENNSYLVANIA, IN 1849.

Elements of cost.	Cost.		
	Labor.	Other.	Total.
Mining 2.67 tons, at \$1 per ton.....	\$2.67	.....	\$2.67
Hauling 2.67 tons, at 50 cents per ton.....	1.33	.....	1.33
Weighing, etc., 2.67 tons, at 10 cents per ton.....	.27	.....	.27
Royalty on 2.67 tons, at 40 cents per ton.....	.....	\$1.08	1.08
Total.....	4.27	1.08	5.35

ROYALTIES

MINERAL LANDS BELONG TO THE SOLE PROPRIETOR IN GOVERNMENT ROYALTIES FROM THE MINES ARE PAID TO THE SOLE PROPRIETOR, AND WHERE THEY HAVE TO BE PAID TO THE SOLE PROPRIETOR OF THE MINES THEY ARE NOT SUBJECTED TO ANY OTHER TAXES OR DUTIES. IN THE COURSE OF A HEARING BEFORE A JOINT COMMISSIONER OF THE HOUSE OF REPRESENTATIVES IN 1891 THE QUESTION OF ROYALTIES FROM MINES WAS DISCUSSED BY WILLIAM BARROW TURNER, A PARLIAMENTARY AGENT, EMPLOYED IN THE JOINT COMMISSIONER'S OFFICE. HE STATED THAT IN THE UNITED STATES THE MINES ARE PAID 10 SHILLINGS AT THE MINIMUM, THE MAXIMUM OF ROYALTY FOR MINERAL LANDS WOULD BE 2 SHILLINGS PER TON. MR. WILLIAM BARROW TURNER, MINING ENGINEER, OF VIGOR, AND MANAGER OF THE JOINT MINES OF THE BARROW HEMATITE IRON AND STEEL COMPANY, STATED TO THE COMMISSIONER AS FOLLOWS:

I WOULD LIKE TO POINT OUT WITH REFERENCE TO THE SELLING SCALE COMMENCING WITH 1 SHILLING AND UP TO 10 SHILLINGS ONE-EIGHTH OF THE SELLING PRICE IS PAID. AFTER 10 SHILLINGS IT IS A SEVENTH AND A HALF OF A SEVENTH; THAT IS TO SAY, IT IS 13.5 PER CENT. WHEN IT IS 15 SHILLINGS IT IS ONE-FIFTH, OR 20 PER CENT. AND WHEN IT GOES TO 25 SHILLINGS IT IS ONE-FOURTH, OR 25 PER CENT. THEREAFTER THEN A LESSOR RECEIVES 15 PER CENT OF THE SELLING PRICE OF THE ORE.

THE COLLIERY GUARDIAN, OF LONDON, IN SPEAKING OF THESE ROYALTIES, SAYS THAT THE LANDLORD'S ROYALTY ON 100 TONS OF PIG IRON PRODUCED IN ONE WEEK AMOUNTED TO 202 POUNDS STERLING, WHILE THE WAGES OF THE EMPLOYEES ON THE SAME QUANTITY OF PIG IRON WERE 95 POUNDS STERLING, AND THAT A CANTARI STEAMSHIP, ON A TRIP ACROSS THE ATLANTIC AND BACK, CONSUMED 4,125 TONS OF COAL, WHICH INVOLVED A ROYALTY TO THE MINE OF £206 5s.

THESE EXTENSIVE ROYALTIES RESULT IN A CONSTANT AGITATION AMONG THE IRON PRODUCERS OF GREAT BRITAIN, AND AS THE ROYALTIES VARY IN DIFFERENT PLACES THEY ARE A DISTURBING ELEMENT IN ARRIVING AT TRUE COST OF PRODUCTION.

ROYALTIES IN DIFFERENT COUNTRIES

[Compiled with some abbreviation from the Annual for 1891 of the Co-operative Wholesale Societies of England and Scotland.]

United States.—In the United States minerals belong to the owner of the soil and mineral lands are subject to the same taxation as other lands, but no government royalties are levied; royalties, however, may be paid to the owner by those working mines.

England.—In England the land owner does not, as a rule, work the minerals in his estate: he leases the right of mining to others, reserving certain royalties or money payments. The length of lease, amount of royalties, and conditions imposed on the lessee vary in different localities, but all payments are usually proportionate to the amount of minerals obtained. The modern practice of levying a royalty for every ton of ore obtained, instead of per acreage, was introduced very gradually.

In England there are several taxes or payments which must be made where mines are not worked by the owner, but by lessees. They are: (a) Royalties, which are payments made to a land owner for permission to enter on his lands and take away mineral ore, such payment depending on the amount of ore worked. The amount of ore is calculated by the ton, as in Northumberland, or by the foot or by the acre, as in Yorkshire. (b) Dead rents. The sum agreed upon must be paid whether the mine be worked or not. In order to secure the due working of the mine, the land owner inserts in the lease a condition that he is in each year to receive not less than a certain sum in royalties; and this sum must be paid whether the mine be worked

PART I.—COST OF PRODUCTION.

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COST OF ANTHRACITE PIG IRON AT A FURNACE IN EASTERN PENNSYLVANIA.

[From Report of Tenth Census, Vol. XX, page 111, where it is given as compiled by William E. B. Baker for The Iron Age.]

Items.	1880.	1879.	1878, Jan. 1.	1877, July 1.	1876, Mar. 1.	1875, Mar. 1.	1874, Mar. 1.	1873.
Cost of ore to the ton of pig iron...	\$11.49	\$9.97	\$9.51	\$7.89	\$9.54	\$11.95	\$14.75	\$15.37
Cost of coal to the ton of pig iron...	5.75	5.14	5.29	4.93	5.79	5.81	7.90	7.45
Cost of limestone to the ton of pig iron.	1.23	1.09	.75	.81	1.01	1.14	2.03	1.11
Cost of [furnace] labor to the ton of pig iron.	2.50	2.35	1.89	2.03	2.54	2.67	4.40	5.11
Cost of general contingencies (a)...	1.40	.95	1.29	1.45	1.75	2.19	2.39	2.00
Cost at furnace bank	23.79	19.51	15.78	17.10	21.61	24.17	31.47	33.41
Add interest on capital on a product of 8,000 tons.	1.00	1.00	1.15	1.11	1.59	1.70	2.03	2.05
Total cost to producer	23.79	20.51	16.93	18.21	23.20	25.87	33.47	35.46

Items.	1872.	1871.	1870.	1869.	1868.	1867.	1866.	1865.
Cost of ore to the ton of pig iron...	\$12.64	\$12.67	\$12.95	\$11.39	\$11.11	\$11.71	\$12.19	\$12.13
Cost of coal to the ton of pig iron.	7.29	5.59	7.69	7.41	7.11	7.44	7.55	8.06
Cost of limestone to the ton of pig iron.	3.04	2.08	2.44	2.14	2.51	2.76	2.93	2.95
Cost of [furnace] labor to the ton of pig iron.	4.99	3.54	3.89	3.49	3.35	3.99	3.46	4.56
Cost of general contingencies (a)...	2.96	2.77	3.97	1.95	1.90	1.96	2.03	2.91
Cost at furnace bank	29.86	29.65	30.94	26.39	26.39	27.95	27.95	33.21
Add interest on capital on a product of 8,000 tons.	1.79	1.83	1.85	1.71	1.63	1.99	1.94	1.91
Total cost to producer	32.33	31.47	31.89	28.10	27.93	29.93	29.83	35.12

Items.	1864.	1863.	1862.	1861.	1860.	1859.	1858.	1857.
Cost of ore to the ton of pig iron...	\$9.12	\$7.49	\$7.06	\$7.35	\$7.45	\$7.98	\$7.06	\$7.75
Cost of coal to the ton of pig iron...	5.41	3.42	3.68	3.26	3.49	3.26	4.05	3.89
Cost of limestone to the ton of pig iron.	1.98	1.20	1.11	1.17	1.21	1.15	1.16	1.14
Cost of [furnace] labor to the ton of pig iron.	2.85	2.07	1.97	1.97	1.87	1.83	2.19	2.30
Cost of general contingencies (a)...	1.06	2.35	2.67	2.34	2.39	2.83	2.73	2.16
Cost at furnace bank	20.97	18.13	16.11	16.81	16.83	16.14	17.73	17.94
Add interest on capital on a product of 8,000 tons.	1.59	1.40	1.57	1.97	1.34	1.28	1.23	1.47
Total cost to producer	22.56	17.83	17.68	18.78	18.21	17.43	18.96	19.41

Items.	1856.	1855.	1854.	1853.	1852.	1851.	1850.
Cost of ore to the ton of pig iron...	\$7.69	\$7.51	\$6.65	\$5.97	\$5.55	\$5.44	\$5.75
Cost of coal to the ton of pig iron...	3.00	4.43	3.53	3.23	3.65	3.26	3.79
Cost of limestone to the ton of pig iron.	1.16	1.26	1.30	1.11	1.09	1.00	.93
Cost of [furnace] labor to the ton of pig iron.	2.56	2.35	2.45	2.00	2.00	1.61	2.23
Cost of general contingencies (a)...	2.91	2.92	1.99	2.63	2.66	1.99	1.46
Cost at furnace bank	18.66	18.87	16.99	14.83	14.34	12.30	14.23
Add interest on capital on a product of 8,000 tons.	1.21	1.29	1.37	1.23	1.15	1.05	1.05
Total cost to producer	19.86	20.15	17.37	16.10	15.49	13.35	15.28

Tons of ore used to make one ton of pig iron, average of 10 years	2.779
Tons of coal used to make one ton of pig iron, average of 10 years	1.769
Tons of limestone used to make one ton of pig iron, average of 10 years .....	.815

a Presumably this relates to the blast furnace only.

the average monthly prices per ton of 2,240 pounds of pig iron in Pennsylvania, from 1887 to 1890, inclusive, and the prices per ton of 2,240 pounds of No. 1 anthracite foundry pig iron at Philadelphia since 1842. These are drawn from the valuable reports of Hon. James M. Swank,

other Aveyron districts it is much less. In the case of fixed payments, the amount varies from $\frac{1}{4}$ d. to $\frac{1}{2}$ d. per acre, though in exceptional cases they are much higher.

Apart from payments to the surface owner, the following payments have to be made to the state:

(1) A yearly rent of 10d. per square kilometre, a kilometre being equivalent to 1,093 yards.

(2) A fixed annual rent of 5 per cent. on the net produce of the mine.

(3) One penny additional for every 10d. paid, in order to form a relief fund for those injured by accident in mines.

Sir Isaac Lothian Bell considers that 5 per cent. on the net produce is equivalent to a royalty of about $1\frac{1}{4}$ d. per ton. If, however, the concessionaire, instead of working the mine himself lets it out to others, his position is that of an English landlord, and the lessee, in addition to the above payments, will have to pay a competitive rent to the concessionaire.

Belgium.—In Belgium the mining law is based on the French legislation. Every person who acquires a right of mining is required to pay to the state the following taxes:

(1) A fixed tax of 10d. per annum for each square kilometre of the area granted.

(2) A tax of $2\frac{1}{2}$ per cent. of the net produce.

(3) A small additional percentage on the above two taxes towards the expenses of the mining department.

Spain.—In Spain any person may apply to the governor of a province for permission to work minerals in a specified plot of ground. The application is advertised, and if there is no opposition the grant will be made of the right of mining in perpetuity. The sole condition annexed to the grant is that the grantee will pay a surface rent equivalent to 1s. 5d. per acre for ironstone and 3s. 6d. per acre for other minerals, and 1 per cent. on the gross production of the mine. The grantee, however, does not, as a rule, work the minerals himself; he sells his right, or he leases it at a royalty per ton. The grantee, in fact, takes the position of the landlord in England, and exacts as high a royalty as he can obtain. In old leases the royalty varies from 8d. to 2s. per ton, and at present the royalty is sometimes as high as 3s. 6d. per ton on ore that is worth 10s. per ton f. o. b. It may be added that Spain reserves the right of granting a title to minerals apart from the surface, not only as regards coal and iron, but also as regards such substances as asphalt, pitch, bitumen, and petroleum; whilst all minerals of an earthy nature, such as slate, limestone, marls, etc., are granted to the owner of the surface.

Germany.—In Prussia no royalties are levied by the state on iron mines; all other mines, as a rule, pay 2 per cent. on the value of the produce at the time of output. All mines, however, must contribute to the miners' benefit fund, which provides assistance to miners in the case of illness or accident. The owner of the mine must also compensate the surface owner for any damage he causes to the surface. But, apart from these minor payments, all iron mines granted by the state are free from royalties, whilst coal and other mines pay the above 2 per cent. Sir Lothian Bell regards this 2 per cent. as equivalent to a royalty of $1\frac{1}{4}$ d. per ton on coal sold at 6s. per ton. There are, however, private mines in Prussia, and the owners of such mines obtain the best rent they can for the privilege of working. As a rule the royalty is one-tenth of the gross produce, but of late years the difficulty of competing with mines that only pay 2 per cent. of their produce has had the result of reducing the royalties in private mines. Private mines are liable to contribute to the state 1 per cent. towards the expenses of the mining department of the government.

Austria.—In Austria all minerals are reserved to the state. Any person can obtain a permit to search for minerals in a specified area, and if minerals are found one or more "free diggings" may be obtained. If the miner can come to terms with the proprietor of the surface land, arbitrators are appointed to fix the price to be paid. For each digging of 424 metres diameter the miner pays an annual tax of about 6s. 8d. For the actual working of each mine of 3,597 square metres, 4 florins have also to be paid.

Sweden and Norway.—In Sweden a right to minerals can only be acquired from the state, and the small fixed sum of 10s. 10d. is paid when the grant is made. No royalty is exacted, and the only tax paid is the ordinary income tax.

In Norway similar rules prevail, but the owner of the ground may claim one-tenth share in a mine on his property. No tax is paid for the right of mining, except in the case of alluvial gold.

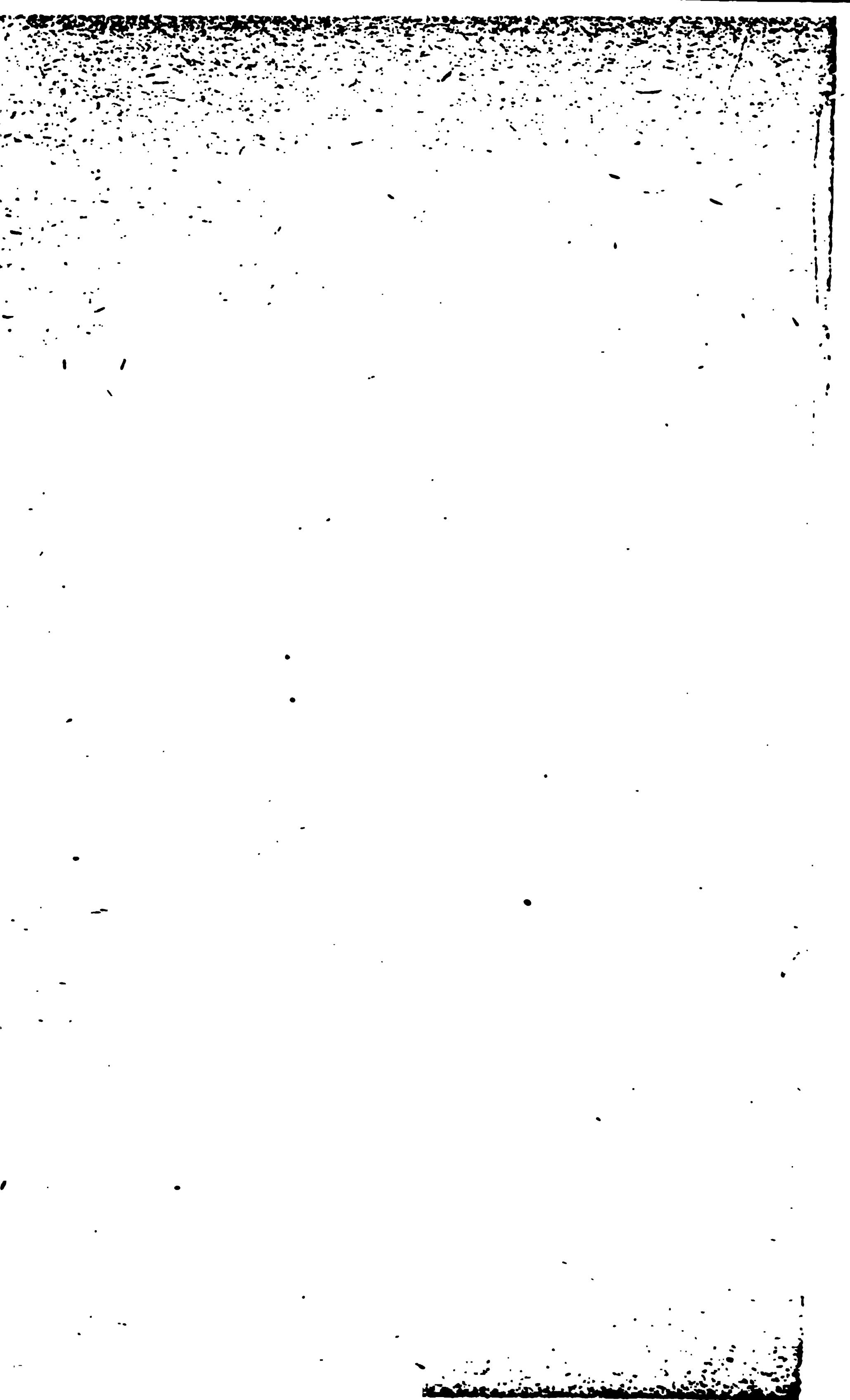
The following statement and table relative to the prices of lake Superior iron ore are taken from the report of the American Iron and Steel Association, prepared by Hon. James M. Swank, secretary.

The subjoined table gives the prices at which lake Superior iron ore has been sold during the last seven years for season contracts, delivered at Cleveland, contracts having been made early in the year, except in 1888, when season prices were not fixed until May. It will be noticed that prices for 1890 are much higher than for 1888 or 1889. To furnace owners who were compelled to purchase ore in the last two or three months of 1889 prices were higher than the figures given in the table, but with the exceptions mentioned contracts for 1889 were made substantially at the quoted figures; indeed it is said that a majority of the contracts for 1890 were made in December, 1889. Prices for 1888 fluctuated above and below the figures given in the table, and in 1887 the spring prices given in the table were not maintained throughout the year. The prices given are per ton of 2,240 pounds.

PRICES OF LAKE SUPERIOR IRON ORE.

Ore.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Republic and Champion No. 1	\$6.00	\$5.75	\$6.25	\$7.00	\$5.75	\$5.50	\$6.50
Barnum, Cleveland, and lake Superior specular No. 1.	5.75	5.00	5.50	6.50	5.25	5.00	6.00
Chapin and Menominee No. 1.....	5.25	4.75	5.25	6.00	4.75	4.50	5.50
Vermilion district, No. 1 Bessemer	4.75	5.00	5.75	6.75	5.75	5.50	6.50
Gogebic district, first quality Bessemer ...	.....	5.00	5.00	6.00	4.75	5.00	6.00
Hematites No. 1, non-Bessemer	4.50	4.00	4.50	5.00	4.00	3.75	4.50

4



MUCK BAR IRON.



MUCK BAR IRON.

As far as possible the presentation of facts relating to the cost of producing muck bar iron has been made to conform to the presentation under pig iron. The titles of the tables and sub-tables are here shown:

TABLE II.—*Cost of Production of Muck Bar Iron at Various Establishments in Various States.*

- A.—Period covered and quantity of product.
- B.—Quantity and cost of materials used.
- C.—Proportions of materials used.
- D.—General statement of cost for the period.
- E.—Elements of cost in one ton of 2,240 pounds.
- F.—Per cent. of each element of cost in one ton of 2,240 pounds.
- G.—Additional cost of certain theoretical elements.
- H.—Additional cost of certain theoretical elements in one ton of 2,240 pounds.

As the basis of muck bar iron is pig metal, which has been so fully analyzed, the table showing the cost of production of muck bar iron need not be considered at length.

In sub-table A the days of running time are days of two turns each, except in the cases noted as working only one turn. The general rule is that the establishments work two turns during each of the first five days of the week, one turn on Saturday and are idle on Sunday. In order to show the daily production on full time the time has been reduced to days of two full turns each except in those mills which are never operated at night.

As will be noticed there is a wide divergence in daily output between establishments having the same number of puddling furnaces. This is accounted for by the fact that the number of puddling furnaces reported is the actual number possessed by the establishment, and very frequently exceeds the number in operation at one time.

Sub-tables B and C, relating to the kind and cost of materials used are important in connection with the cost of product, for they furnish the explanations for differences in the cost of materials per ton of product, and also and especially, for differences between labor costs in the same locality, for the price paid for puddling scrap is invariably less than that paid for puddling pig iron, and as a consequence, muck bar iron made wholly or largely from scrap will show a smaller labor cost than if it were made from pig iron.

TABLE II.—COST OF PRODUCTION OF MUCK BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT.

Establishment number.	Locality.	Period covered.		Muck bar iron produced (tons of 2,240 pounds).		Number of—	
		Terminal dates.	Days of running time.	Total.	Per day.	Puddling furnaces.	Trains of rolls.
1	United States	Jan. 5, 1889, to Jan. 4, 1890	376	26,599	69	47	2
2	do	July 1, 1889, to Dec. 31, 1889	126	1,408	12	8	1
3	do	Feb. 1, 1889, to Jan. 31, 1890	96	2,149	22	12	1
4	do	Sept. 1, 1889, to Nov. 30, 1889	72	4,521	60	20	1
5	do	Nov. 1, 1889, to Jan. 31, 1890	27	1,554	61	(a)	1
6	do	Dec. 1, 1889, to Dec. 31, 1889	24	1,490	20	10	1
7	do	Jan. 1, 1889, to June 30, 1889	89	2,278	27	12	2
8	do	July 1, 1889, to June 30, 1889	242	2,347	24	12	1
9	do	July 1, 1889, to June 30, 1889	205	1,657	27	8	1
10	do	July 1, 1889, to June 30, 1889	253	12,530	33	24	1
11	do	July 21, 1889, to Aug. 9, 1889	222	4,843	20	8	1
12	do	Aug. 1, 1889, to July 31, 1889	186	2,232	12	4	1
13	do	Jan. 1, 1889, to Dec. 31, 1889	256	8,896	25	16	1
14	do	Jan. 1, 1889, to Dec. 31, 1889	281	28,368	126	16	1
15	do	Jan. 1, 1889, to Dec. 31, 1889	281	7,583	27	12	1
16	do	Jan. 1, 1889, to Dec. 31, 1889	(b)	(b)	(b)	(b)	(b)
17	do	Jan. 1, 1889, to Dec. 31, 1889	149	6,976	67	22	1
18	do	July 1, 1889, to June 30, 1889	182	16,246	89	24	1
19	do	Nov. 1, 1889, to Oct. 31, 1889	309	2,160	67	8	1
20	do	Jan. 1, 1889, to Dec. 31, 1889	222	4,975	30	12	1
21	do	Jan. 1, 1889, to Dec. 31, 1889	281	2,890	25	16	2
22	do	Jan. 1, 1889, to June 30, 1889	140	6,227	38	22	1
23	do	June 3, 1889, to June 16, 1889	11	2,523	23	10	1
24	do	July 1, 1889, to Oct. 31, 1889	89	2,600	34	16	1
25	do	July 1, 1889, to June 30, 1889	236	4,121	24	20	1
26	do	Feb. 1, 1889, to Jan. 31, 1890	188	2,050	48	22	1
27	do	Jan. 1, 1890, to Mar. 31, 1890	70	2,452	48	24	1
28	Continent of Europe	Jan. 1, 1889, to Dec. 31, 1889	360	28,064	100	25	1
29	do	(b)	(b)	(b)	(b)	(b)	(b)
30	do	Oct. 1, 1889, to Dec. 31, 1889	75	2,835	38	(b)	1
31	do	Apr. 1, 1889, to June 30, 1889	(b)	6,904	(b)	(b)	(b)
32	do	July 1, 1889, to Sept. 30, 1889	(b)	6,777	(b)	(b)	(b)
33	do	Oct. 1, 1889, to Dec. 31, 1889	(b)	7,062	(b)	(b)	(b)
34	do	Jan. 1, 1889, to Dec. 31, 1889	(b)	(b)	(b)	(b)	(b)
35	Great Britain	Apr. 1, 1889, to Sept. 29, 1889	108	4,710	43	20	2
36	do	Jan. 1, 1889, to Dec. 31, 1889	275	26,368	74	28	1
37	do	Jan. 1, 1889, to June 30, 1889	141	12,902	90	25	1
38	do	July 24, 1889, to Aug. 2, 1889	6	165	28	11	1

a There are no puddling furnaces; the product was made entirely from scrap which was reheated only.

b Not reported.

c Only one turn per day is worked in this establishment.

PART I.—COST OF PRODUCTION.

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TABLE III.—COST OF PRODUCTION OF MUCK BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

B.—QUANTITY AND COST OF MATERIALS USED.

[Establishments numbers 1 to 37 are in the United States; numbers 38 to 44 are on the continent of Europe; and numbers 45 to 48 are in Great Britain.]

Es- tab- lish- ment num- ber.	Tons of 2,240 pounds.				Cost.				
	Pig iron.	Scrap.	Ore.	Other.	Pig iron.	Scrap.	Ore.	Other.	Total.
1	a 27,965	(a)	(b)	.....	a \$292,294	(a)	\$72,529	.....	\$364,824
2	1,185	220	408	.....	20,785	32,240	2,400	.....	25,425
3	2,864	.....	321	.....	23,511	.....	1,500	.....	25,011
4	1,761	2,864	487	.....	25,507	44,815	1,968	.....	71,980
5	.....	1,833	.....	.....	.....	34,338	.....	.....	34,338
6	821	.....	94	.....	8,336	.....	672	.....	9,008
7	2,390	7	1,475	.....	57,321	71	6,900	.....	62,792
8	5,998	.....	1,114	.....	129,892	.....	7,500	.....	147,892
9	9,168	.....	307	.....	134,401	.....	2,150	.....	136,551
10	11,977	3,063	2,025	.....	170,119	60,298	15,726	.....	246,137
11	2,916	948	870	.....	58,614	13,662	5,890	.....	78,166
12	2,333	.....	135	.....	22,828	.....	620	.....	24,748
13	8,549	465	2,378	.....	124,457	5,731	12,154	.....	142,342
14	24,370	5,638	2,250	.....	518,499	132,760	11,486	.....	662,745
15	6,573	1,822	1,488	.....	100,238	28,867	10,263	.....	139,458
16	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
17	2,376	231	2,130	.....	161,843	3,020	14,153	.....	179,016
18	16,430	1,043	4,128	.....	247,943	23,428	23,300	.....	294,671
19	2,176	.....	496	.....	33,718	.....	2,900	.....	36,708
20	7,045	.....	3,329	.....	107,014	.....	11,645	.....	118,659
21	5,806	5,678	2,450	.....	91,000	73,710	14,700	.....	179,410
22	3,827	.....	2,000	.....	123,506	.....	10,060	.....	133,566
23	232	.....	56	.....	3,790	.....	383	.....	4,173
24	2,268	.....	412	.....	50,533	.....	2,370	.....	52,903
25	8,306	882	1,047	.....	124,305	12,418	6,282	.....	142,905
26	9,435	.....	1,914	.....	143,762	.....	12,639	.....	156,401
27	2,507	1,379	1,068	.....	31,341	12,968	5,105	.....	49,414
28	34,958	.....	(b)	.....	342,768	.....	2,274	.....	345,042
29	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
30	2,250	.....	(b)	.....	a 29,008	.....	a 584	.....	a 29,592
31	d 7,205	(d)	.....	.....	83,569	2,906	.....	.....	86,475
32	d 6,119	(d)	.....	.....	101,635	2,823	.....	.....	104,458
33	d 3,439	(d)	.....	.....	113,190	4,098	.....	.....	117,288
34	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
35	4,896	382	516	a 32	89,149	5,222	1,635	a 388	94,394
36	a 31,123	(a)	4,979	.....	a 194,913	(a)	a 12,174	.....	a 207,087
37	13,725	108	8,681	.....	120,719	820	10,076	.....	131,715
38	175	8	17	a 17	a 1,908	a 30	a 40	a 20	a 2,008

a The quantity and cost of scrap are inseparably combined with the quantity and cost of pig iron.

b Not reported.

c Net cost; the value of the cinder, scrap, etc., has been deducted.

d The quantity of scrap is inseparably combined with the quantity of pig iron.

e Cinder.

TABLE II.—COST OF PRODUCTION OF MUCK BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT.

Establishment number.	Locality.	Period covered.		Muck bar iron produced (tonnes of 2,240 pounds).		Number of—	
		Terminal dates.	Days of running time.	Total.	Per day.	Puddling furnaces.	Tractions of rolls.
1	United States	Jan. 3, 1888, to Jan. 4, 1890	270	25,599	95	67	2
2	do	July 1, 1888, to Dec. 31, 1889	120	1,409	12	6	1
3	do	Feb. 1, 1889, to Jan. 31, 1890	365	2,149	22	11	1
4	do	Sept. 1, 1889, to Nov. 30, 1889	72	4,331	60	30	1
5	do	Nov. 1, 1889, to Jan. 31, 1890	87	1,958	61	(a)	1
6	do	Dec. 1, 1889, to Dec. 31, 1889	24	440	25	8	1
7	do	Jan. 1, 1890, to June 30, 1890	60	2,278	27	19	2
8	do	July 1, 1889, to June 30, 1890	342	2,347	36	12	1
9	do	July 1, 1889, to June 30, 1890	265	7,637	37	8	1
10	do	July 1, 1889, to June 30, 1890	253	13,530	53	24	1
11	do	July 21, 1888, to Aug. 3, 1889	229	4,345	20	8	1
12	do	Aug. 1, 1889, to July 31, 1890	196	2,222	12	4	1
13	do	Jan. 1, 1889, to Dec. 31, 1889	365	6,398	35	16	1
14	do	Jan. 1, 1889, to Dec. 31, 1889	331	23,358	126	16	1
15	do	Jan. 1, 1889, to Jan. 31, 1890	331	7,932	27	12	1
16	do	Jan. 1, 1889, to Dec. 31, 1889	(b)	(b)	(b)	(b)	(b)
17	do	Jan. 1, 1889, to Dec. 31, 1889	149	2,928	67	23	1
18	do	July 1, 1889, to June 30, 1890	183	18,240	90	24	1
19	do	Nov. 1, 1889, to Oct. 31, 1890	290	2,190	67	6	1
20	do	Jan. 1, 1889, to Dec. 31, 1889	322	6,975	30	13	2
21	do	Jan. 1, 1889, to Dec. 31, 1889	261	2,860	34	16	3
22	do	Jan. 1, 1889, to June 30, 1889	140	8,337	60	32	1
23	do	June 3, 1889, to June 16, 1889	11	333	23	19	1
24	do	July 1, 1889, to Oct. 31, 1889	89	3,000	24	16	1
25	do	July 1, 1889, to June 30, 1889	226	5,181	24	22	1
26	do	Feb. 1, 1889, to Jan. 31, 1890	189	3,050	16	23	1
27	do	Jan. 1, 1890, to Mar. 31, 1890	70	3,452	11	24	1
28	Continent of Europe	Jan. 1, 1889, to Dec. 31, 1889	360	23,964	11	25	1
29	do	(b)	(b)	(b)	(b)	(b)	(b)
30	do	Oct. 1, 1889, to Dec. 31, 1889	75	2,325	30	9	1
31	do	Apr. 1, 1889, to June 30, 1889	(b)	6,061	(b)	(b)	(b)
32	do	July 1, 1889, to Sept. 30, 1889	(b)	6,777	(b)	(b)	(b)
33	do	Oct. 1, 1889, to Dec. 31, 1889	(b)	7,062	(b)	(b)	(b)
34	do	Jan. 1, 1889, to Dec. 31, 1889	(b)	(b)	(b)	(b)	(b)
35	Great Britain	Apr. 1, 1888, to Sept. 29, 1888	169	4,710	43	30	3
36	do	Jan. 1, 1889, to Dec. 31, 1889	276	20,368	74	39	1
37	do	Jan. 1, 1889, to June 30, 1889	143	12,902	60	25	1
38	do	July 23, 1888, to Aug. 3, 1889	6	163	22	11	1

a There are no puddling furnaces; the product was made entirely from scrap which was reheated only.

b Not reported.

c Only one turn per day is worked in this establishment.

TABLE II.—COST OF PRODUCTION OF PUCK BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

B.—QUANTITY AND COST OF MATERIALS USED.

[Establishments numbers 1 to 37 are in the United States; numbers 38 to 54 are on the continent of Europe; and numbers 55 to 66 are in Great Britain.]

Establishment number.	Tons of 2,240 pounds.				Cost.				
	Pig iron.	Scrap.	Ors.	Other.	Pig iron.	Scrap.	Ors.	Other.	Total.
1	\$ 27,955	(a)	(b)	-----	\$ 2292, 364	(a)	\$72, 620	-----	\$265, 014
2	1, 185	200	400	-----	20, 785	93, 210	2, 400	-----	25, 435
3	2, 364	-----	321	-----	23, 5:1	-----	1, 500	-----	25, 021
4	1, 791	2, 394	487	-----	25, 507	44, 815	1, 858	-----	71, 999
5	-----	1, 832	-----	-----	-----	25, 320	-----	-----	25, 320
6	521	-----	96	-----	8, 336	-----	672	-----	9, 008
7	2, 206	7	1, 475	-----	57, 321	71	8, 900	-----	62, 782
8	9, 908	-----	1, 114	-----	139, 892	-----	7, 690	-----	147, 682
9	9, 188	-----	307	-----	124, 491	-----	2, 150	-----	126, 551
10	11, 977	8, 083	2, 005	-----	170, 119	60, 298	15, 720	-----	246, 137
11	1, 918	948	870	-----	58, 614	13, 643	5, 890	-----	78, 168
12	2, 333	-----	135	-----	32, 328	-----	920	-----	34, 748
13	8, 649	443	2, 378	-----	124, 457	6, 781	13, 154	-----	143, 943
14	36, 270	5, 538	2, 350	-----	518, 469	123, 760	11, 486	-----	652, 715
15	6, 573	1, 822	1, 483	-----	100, 228	28, 867	10, 363	-----	139, 458
16	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
17	9, 878	221	2, 124	-----	161, 843	3, 630	14, 153	-----	179, 626
18	16, 420	1, 043	4, 128	-----	247, 943	22, 426	23, 300	-----	293, 668
19	2, 175	-----	498	-----	23, 713	-----	2, 390	-----	26, 703
20	7, 045	-----	2, 329	-----	107, 014	-----	11, 645	-----	118, 659
21	5, 606	5, 670	2, 450	-----	91, 000	73, 710	14, 700	-----	179, 410
22	8, 827	-----	2, 000	-----	125, 500	-----	10, 800	-----	135, 500
23	252	-----	56	-----	3, 780	-----	383	-----	4, 142
24	1, 268	-----	412	-----	50, 652	-----	2, 370	-----	53, 022
25	8, 399	893	1, 047	-----	124, 305	13, 418	6, 282	-----	144, 005
26	9, 435	-----	1, 914	-----	143, 762	-----	12, 639	-----	155, 501
27	2, 507	1, 279	1, 098	-----	81, 341	12, 968	6, 105	-----	99, 414
28	34, 050	-----	(b)	-----	342, 788	-----	2, 274	-----	345, 042
29	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
30	3, 250	-----	(b)	-----	\$ 29, 003	-----	\$ 584	-----	\$ 29, 587
31	d 7, 265	(d)	-----	-----	83, 509	2, 906	-----	-----	86, 535
32	d 8, 119	(d)	-----	-----	101, 635	2, 883	-----	-----	104, 617
33	d 8, 488	(d)	-----	-----	112, 180	4, 098	-----	-----	117, 288
34	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
35	4, 896	352	616	\$ 32	39, 140	3, 223	1, 835	\$ 88	44, 304
36	\$ 21, 123	(a)	4, 629	-----	\$ 184, 913	(a)	\$ 13, 174	-----	\$ 208, 687
37	13, 728	108	8, 661	-----	120, 719	620	10, 076	-----	131, 715
38	175	6	17	\$ 17	c 1, 960	\$ 30	c 40	c 20	c 2, 050

a The quantity and cost of scrap are inseparably combined with the quantity and cost of pig iron.

b Not reported.

c Net cost; the value of the cinder, scrap, etc., has been deducted.

d The quantity of scrap is inseparably combined with the quantity of pig iron.

e Cinder.

TABLE II.—COST OF PRODUCTION OF PIG-IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

C.—PROPORTIONS OF MATERIALS USED.

[Establishments numbers 1 to 27 are in the United States; numbers 28 to 34 are on the continent of Europe; and numbers 35 to 38 are in Great Britain.]

Establishment	Pounds of materials to one ton of product.				Cost of materials per ton of 2,240 pounds.			
	Pig-iron.	Scrap.	Coal.	Other.	Pig-iron.	Scrap.	Coal.	Other.
1	100	0	100	0	100	0	100	0
2	100	0	100	0	100	0	100	0
3	100	0	100	0	100	0	100	0
4	100	0	100	0	100	0	100	0
5	100	0	100	0	100	0	100	0
6	100	0	100	0	100	0	100	0
7	100	0	100	0	100	0	100	0
8	100	0	100	0	100	0	100	0
9	100	0	100	0	100	0	100	0
10	100	0	100	0	100	0	100	0
11	100	0	100	0	100	0	100	0
12	100	0	100	0	100	0	100	0
13	100	0	100	0	100	0	100	0
14	100	0	100	0	100	0	100	0
15	100	0	100	0	100	0	100	0
16	100	0	100	0	100	0	100	0
17	100	0	100	0	100	0	100	0
18	100	0	100	0	100	0	100	0
19	100	0	100	0	100	0	100	0
20	100	0	100	0	100	0	100	0
21	100	0	100	0	100	0	100	0
22	100	0	100	0	100	0	100	0
23	100	0	100	0	100	0	100	0
24	100	0	100	0	100	0	100	0
25	100	0	100	0	100	0	100	0
26	100	0	100	0	100	0	100	0
27	100	0	100	0	100	0	100	0
28	100	0	100	0	100	0	100	0
29	100	0	100	0	100	0	100	0
30	100	0	100	0	100	0	100	0
31	100	0	100	0	100	0	100	0
32	100	0	100	0	100	0	100	0
33	100	0	100	0	100	0	100	0
34	100	0	100	0	100	0	100	0
35	100	0	100	0	100	0	100	0
36	100	0	100	0	100	0	100	0
37	100	0	100	0	100	0	100	0
38	100	0	100	0	100	0	100	0

a The quantity and cost of scrap are inseparably combined with the quantity and cost of pig-iron.

b Not reported.

c Not met. The value of the under, scrap, etc., has been deducted.

d Under.

TABLE II.—COST OF PRODUCTION OF MUCK BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

D.—GENERAL STATEMENT OF COST FOR THE PERIOD.

[Establishments numbers 1 to 27 are in the United States; numbers 28 to 34 are on the continent of Europe; and numbers 35 to 38 are in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Materials.			Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
	Gross.	Value of sludge, scrap, etc.	Net.						
1	\$385,014	\$4,548	\$380,466	\$200,046	\$6,500	\$23,047	\$2,344	\$781	\$638,099
2	25,425	182	25,243	8,082	420	2,336	862	31	37,624
3	85,021	600	84,421	16,225	1,611	2,009	2,261	300	97,827
4	71,990	4,500	67,490	30,111	8,500	8,227	2,277	350	112,065
5	36,330	800	35,530	7,282	278	2,120	627	58	45,794
6	9,008	62	8,946	2,640	108	1,008	280	42	13,104
7	63,792	658	63,134	25,682	2,835	9,874	2,120	1,500	103,167
8	147,692	3,290	144,412	62,674	4,180	13,068	5,158	138	229,850
9	136,551	2,500	134,051	64,886	5,500	9,128	4,420	97	208,101
10	246,137	9,248	237,889	101,679	6,996	21,638	10,001	230	376,438
11	78,166	3,211	74,955	24,862	1,367	6,322	2,067	416	119,721
12	34,748	1,728	33,020	18,068	1,143	4,860	2,654	58	69,838
13	143,342	3,707	139,635	66,765	2,489	16,988	7,881	151	231,540
14	682,715	2,500	680,215	282,043	9,968	74,850	38,713	632	1,058,420
15	139,456	6,489	132,967	50,895	4,800	14,119	7,353	396	215,734
16	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
17	179,626	3,598	176,028	71,016	3,218	7,062	8,686	620	266,491
18	293,668	4,242	289,426	126,535	2,500	28,066	10,215	450	455,112
19	26,703	784	25,919	15,866	1,340	4,770	2,374	185	60,454
20	118,650	4,000	114,650	42,471	2,200	15,812	7,753	174	183,080
21	179,410	9,240	170,170	61,000	3,000	25,538	7,752	530	258,008
22	125,500	1,620	123,880	68,409	3,500	15,500	8,250	732	231,272
23	4,143	23	4,120	1,271	117	338	213	23	6,081
24	53,072	1,400	51,672	18,541	1,500	5,572	9,240	207	83,682
25	144,005	3,564	140,441	47,448	2,067	12,547	8,933	1,441	218,877
26	155,801	4,301	151,500	60,801	2,118	10,815	8,467	1,681	240,229
27	49,414	2,282	47,132	28,132	150	10,167	4,924	266	91,370
28	345,042	11,780	333,262	52,909	2,441	62,849	25,990	1,108	479,649
29	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
30	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
31	68,535	3,322	65,213	13,857	2,450	2,900	4,287	(a)	109,807
32	164,617	3,741	160,876	15,858	2,318	2,772	2,822	(a)	123,648
33	117,286	5,699	111,587	16,418	2,634	3,044	4,378	(e)	138,062
34	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
35	44,304	524	43,780	11,152	177	8,994	3,181	74	67,358
36	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
37	131,715	3,025	128,690	44,877	876	21,106	8,493	130	204,082
38	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

^a The low labor cost in this establishment is accounted for by the fact that the product was made entirely from scrap which was reheated only.

^b Not reported.

^c The expenditures for taxes are inseparably combined with those for officials and clerks.

TABLE II.—COST OF PRODUCTION OF HUCK NAIL IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

E.—ELEMENTS OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 27 are in the United States; numbers 28 to 34 are on the continent of Europe; and numbers 35 to 38 are in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Materials.					Value of cinder, scrap, etc.	Net.	Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
	Gross.												
	Pig iron.	Scrap.	Orn.	Other.	Total.								
1	\$10.993	(a)	\$2.720		\$13.713	\$0.170	\$13.543	\$7.740	\$0.344	\$2.028	\$0.813	\$0.030	\$22.914
2	14.947	\$1.000	1.714		18.161	.180	18.081	5.737	.300	2.243	.018	.022	27.089
3	18.508		.000		18.508	.279	18.229	7.450	.780	1.400	1.000	.140	28.999
4	8.002	10.371	.000		18.373	1.041	17.332	6.909	.810	1.900	.785	.091	28.143
5		21.808			21.808	.483	21.325	54.297	.107	1.250	.318	.000	27.953
6	17.287		1.400		18.687	.120	18.567	5.500	.220	2.100	.750	.000	27.800
7	17.638	.023	1.800		19.461	.200	19.261	7.533	.071	3.012	.047	.000	22.083
8	18.709		.000		18.709	.000	18.709	7.437	.401	1.073	.012	.017	27.537
9	17.503		.281		17.784	.327	17.457	7.108	.718	1.100	.070	.012	27.178
10	12.379	4.487	1.100		18.166	.610	17.556	7.515	.518	1.500	.000	.017	27.070
11	12.800	3.000	1.200		17.100	.700	16.400	7.600	.800	1.171	.000	.000	26.341
12	15.224		.414		16.638	.782	15.856	5.140	.515	2.100	1.100	.000	26.328
13	14.000	.000	1.400		16.131	.424	15.707	7.401	.290	1.700	.000	.017	26.081
14	13.532	3.200	.800		17.532	.000	17.532	7.450	.301	1.951	1.012	.000	27.005
15	13.040	8.787	1.340		18.167	.845	17.322	7.408	.521	1.800	.000	.000	26.080
16	15.375	.150	1.420		16.945	.300	16.645	6.781	.055	1.410	.000	.000	26.394
17	16.808	.300	1.420		18.528	.282	18.246	7.165	.824	1.711	.070	.000	28.848
18	15.287	1.881	1.495		18.663	.284	18.379	7.700	.154	1.700	.000	.000	27.324
19	18.080		1.301		19.381	.300	19.081	7.800	.633	3.218	1.100	.000	22.119
20	15.242		1.670		16.912	.373	16.539	6.900	.815	2.207	1.111	.000	26.240
21	9.226	7.831	1.550		18.607	.848	17.759	5.204	.806	2.000	.701	.000	26.237
22	14.218		1.133		15.351	.184	15.167	7.750	.307	1.700	1.048	.000	26.201
23	15.000		1.400		16.400	.001	16.399	5.044	.465	1.341	.845	.000	24.125
24	10.884		.700		11.584	.607	10.977	5.181	.300	1.837	2.000	.000	27.894
25	15.288	1.650	.773		17.711	.430	17.281	5.800	.284	2.281	1.000	.177	26.919
26	15.885		1.800		17.685	.475	17.210	7.222	.344	1.173	.713	.100	26.545
27	9.038	3.740	1.474		14.252	.850	13.402	8.200	.043	2.287	1.432	.000	26.292
28	11.430		.070		11.500	.115	11.385	7.700	.112	2.000	.000	.000	19.008
29	12.197		.000		12.197	(f)	12.197	6.824	(g)	1.001	1.240	(g)	17.498
30	10.230		.200		10.430	(f)	10.430	2.000	.200	2.113	.000	.000	14.740
31	14.232	.404	(A)		14.745	.555	14.190	2.208	.400	.400	.714	(f)	18.104
32	14.997	.440	(A)		15.437	.554	14.883	2.240	.349	.600	.504	(f)	18.540
33	19.024	.580	(A)		19.606	.607	18.997	2.225	.373	.431	.820	(f)	19.550
34	12.816	(f)	(f)		12.816	.638	12.178	1.605	.457	1.161	.382	(f)	15.904
35	8.312	.000	.300	m. 0.010	8.612	.111	8.501	2.268	.023	1.000	.000	.018	14.301
36	8.000	(a)	.840		8.840	(f)	8.840	3.725	.070	1.360	.000	.000	19.770
37	8.287	.071	.701		9.059	.238	8.821	3.463	.000	1.641	.000	.014	15.810
38	11.938	.123	.243	m. 1.121	12.479	(f)	12.479	3.000	.070	1.072	.794	.018	17.443

a The expenditures for scrap are inseparably combined with those for pig iron.

b The low labor cost in this establishment is accounted for by the fact that the product was made entirely from scrap which was reheated only.

c The expenditures for taxes, insurance, and interest are inseparably combined with those for officials and clerks.

d Including insurance and interest.

e Net cost.

f The value of the cinder, scrap, etc., produced has already been deducted.

g The expenditures for officials and clerks, and taxes are inseparably combined with those for labor.

h The expenditures for ore are inseparably combined with those for supplies and repairs.

i The expenditures for taxes are inseparably combined with those for officials and clerks.

j The expenditures for other materials are inseparably combined with those for pig iron.

k The expenditures for taxes and insurance are inseparably combined with those for officials and clerks.

l Including insurance.

m Cinder.

TABLE II.—COST OF PRODUCTION OF MUCK BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

F.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 27 are in the United States; numbers 28 to 34 are on the continent of Europe; and numbers 35 to 38 are in Great Britain. This table is based on the preceding one, and to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader is referred to that table for such information as they furnish.]

Estab- lishment number.	Materials (net).	Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
1.....	53.67	32.39	1.02	3.43	1.31	.13	100
2.....	65.53	21.18	1.11	3.30	2.27	.68	100
3.....	59.52	23.06	2.79	5.20	2.91	.52	100
4.....	59.74	23.66	3.10	7.29	2.90	.31	100
5.....	77.59	15.90	.60	4.63	1.15	.13	100
6.....	68.27	20.15	.82	7.60	2.75	.32	100
7.....	69.04	24.42	2.71	9.39	2.02	1.42	100
8.....	62.83	27.01	1.78	6.08	2.24	.06	100
9.....	64.42	23.37	2.64	4.39	2.13	.05	100
10.....	62.86	26.87	1.85	5.72	2.64	.05	100
11.....	62.61	28.87	1.14	4.45	2.58	.35	100
12.....	55.17	30.23	1.91	3.15	4.44	.10	100
13.....	60.20	28.37	1.07	6.89	3.40	.07	100
14.....	61.34	26.93	.94	7.05	3.66	.08	100
15.....	61.63	26.37	1.36	6.55	3.41	.18	100
16.....	63.19	21.82	2.11	5.37	3.51	.....	100
17.....	66.06	26.65	1.20	2.65	3.24	.20	100
18.....	63.16	27.58	.55	6.37	2.24	.10	100
19.....	59.41	26.25	2.31	7.80	3.93	.31	100
20.....	62.63	23.29	1.20	3.64	4.23	.10	100
21.....	63.96	19.77	1.16	9.90	3.00	.21	100
22.....	67.89	29.58	1.51	6.70	4.09	.32	100
23.....	67.74	20.90	1.93	5.55	3.50	.38	100
24.....	61.69	22.16	1.79	6.66	7.45	.25	100
25.....	64.16	21.68	.95	3.47	4.08	.60	100
26.....	63.06	27.85	1.30	4.42	2.69	.68	100
27.....	51.58	31.45	.16	11.13	5.39	.29	100
28.....	60.48	11.05	.72	12.10	5.42	.23	100
29.....	70.38	10.44	.....	11.23	7.95	.....	100
30.....	63.37	15.94	1.72	12.83	5.48	.66	100
31.....	73.39	12.75	2.25	2.67	3.94	.....	100
32.....	80.29	12.62	1.84	2.21	3.04	.....	100
33.....	80.82	11.89	1.91	2.21	3.17	.....	100
34.....	76.14	10.42	2.86	7.26	3.32	.....	100
35.....	64.99	16.56	.27	13.35	4.72	.11	100
36.....	61.11	22.21	.42	11.09	4.88	.29	100
37.....	63.06	21.89	.43	10.37	4.16	.09	100
38.....	71.55	17.20	.45	6.15	4.55	.10	100

~~REPORT~~ OF THE COMMISSIONER OF LABOR.

UNITED STATES OF AMERICA

~~2. - FURTHER USE OF CERTAIN THEORETICAL CONCEPTS.~~

of the United States; numbers 29 to 34 are on the continent of Europe; numbers 35 to 38 are in Great Britain.]

Additional cost.			
Insurance.	Interest.	Depreciation of value of plant.	Total.
\$1, 300	\$1, 300		\$1, 574
	238		271
			100
			335
			25
	5, 500		5, 725
		\$1, 640	1, 885
		2, 300	2, 625
			361
	1, 136		1, 234
	193		310
	1, 157		1, 504
			978
			225
(a)	(a)		(a)
			485
			225
	3, 302		3, 354
	7, 415	2, 000	9, 617
	3, 000		3, 050
	4, 500	6, 500	11, 600
	54		74
	2, 324	233	2, 770
	638		1, 463
			346
	2, 922		2, 997
			(a)
			142
			28

• Sex reported

TABLE II.—COST OF PRODUCTION OF MUCK BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Concluded.**II.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS.**

[Establishments numbers 1 to 27 are in the United States; numbers 28 to 34 are on the continent of Europe; and numbers 35 to 38 are in Great Britain.]

Establishment number.	Additional cost per ton.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1.....	\$0.045	\$0.127		\$0.172
2.....	.025	.169		.194
3.....	.047			.047
4.....	.078			.078
5.....				
6.....	.052			.052
7.....	.068	1.078		1.746
8.....	.029		\$0.197	.226
9.....	.016		.327	.343
10.....	.027			.027
11.....	.026	.250		.276
12.....	.053	.087		.140
13.....	.039	.130		.109
14.....	.026			.026
15.....	.029			.029
16.....	(a)	(a)		(a)
17.....	.049			.049
18.....	.014			.014
19.....	.024	1.536		1.560
20.....	.020	1.063	.287	1.879
21.....	.005	.306		.311
22.....	.068	.516	.736	1.314
23.....	.080	.214		.294
24.....	.068	.778	.077	.923
25.....	.077	.103		.180
26.....				
27.....	.100			.100
28.....	.002	.008		.100
29.....				
30.....				
31.....				
32.....				
33.....				
34.....	(a)			(a)
35.....				
36.....	.007			.007
37.....	.002			.002
38.....				

a Not reported.

SUMMARY OF COST OF MUCK BAR IRON IN FOUR ESTABLISHMENTS IN GREAT BRITAIN.

[This summary is drawn from the preceding sub-tables A to H. The establishments covered are numbers 35 to 38, inclusive, being all the muck bar iron mills in Great Britain from which reports were obtained. As may be seen the periods covered are irregular and are in the years 1883 and 1889.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 38,080.	Average cost of one.
Materials (net)	\$382,616	\$10.043
Labor	131,951	2.465
Officials and clerks	2,483	.003
Fuel	63,080	1.733
Supplies and repairs	23,417	.746
Taxes	1,232	.033
Total	614,783	16.145

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Two establishments gave the amount paid for insurance; the aggregate of these makes the sum credited to this item below. Two reported that they had no insurance. All four establishments reported that there was no expenditure for interest and that nothing was charged to depreciation. The sum entered in the first column below is, of course, apportioned in the second column among the whole four establishments.]

Insurance	\$170	\$0.004
Interest		
Depreciation of value of plant		
Total	170	.004

From the foregoing tables it is seen that the average cost of muck bar iron in twenty-six establishments in the United States is \$26.843, and that should what has been denominated theoretical elements of cost be added, the total cost would not be much increased, the average for twenty-four establishments being but 25.5 cents per ton. The cost of muck bar iron, as shown by five establishments on the continent of Europe, is \$17.073. Only one establishment reported any charge for the theoretical elements, this being for insurance and interest, which, if added, would increase the cost but 5.7 cents per ton. The average cost of muck bar iron in Great Britain, as shown by the returns from four establishments, is \$16.145, and the theoretical elements, if added, would increase this cost only 0.4 of a cent per ton, this figure being derived from two establishments.

LABOR COST PER TON OF MAKING MUCK BAR IRON IN GREAT BRITAIN.

The following table shows the cost of labor in making muck bar iron in England in various years from 1877 to 1890, inclusive. The labor cost referred to in this table is that necessary for the production of muck bar iron from pig iron, and does not include the direct labor cost chargeable to all the processes prior to that of making muck bar iron. These costs relate to a well known establishment and were made up for the information of the head of the firm.

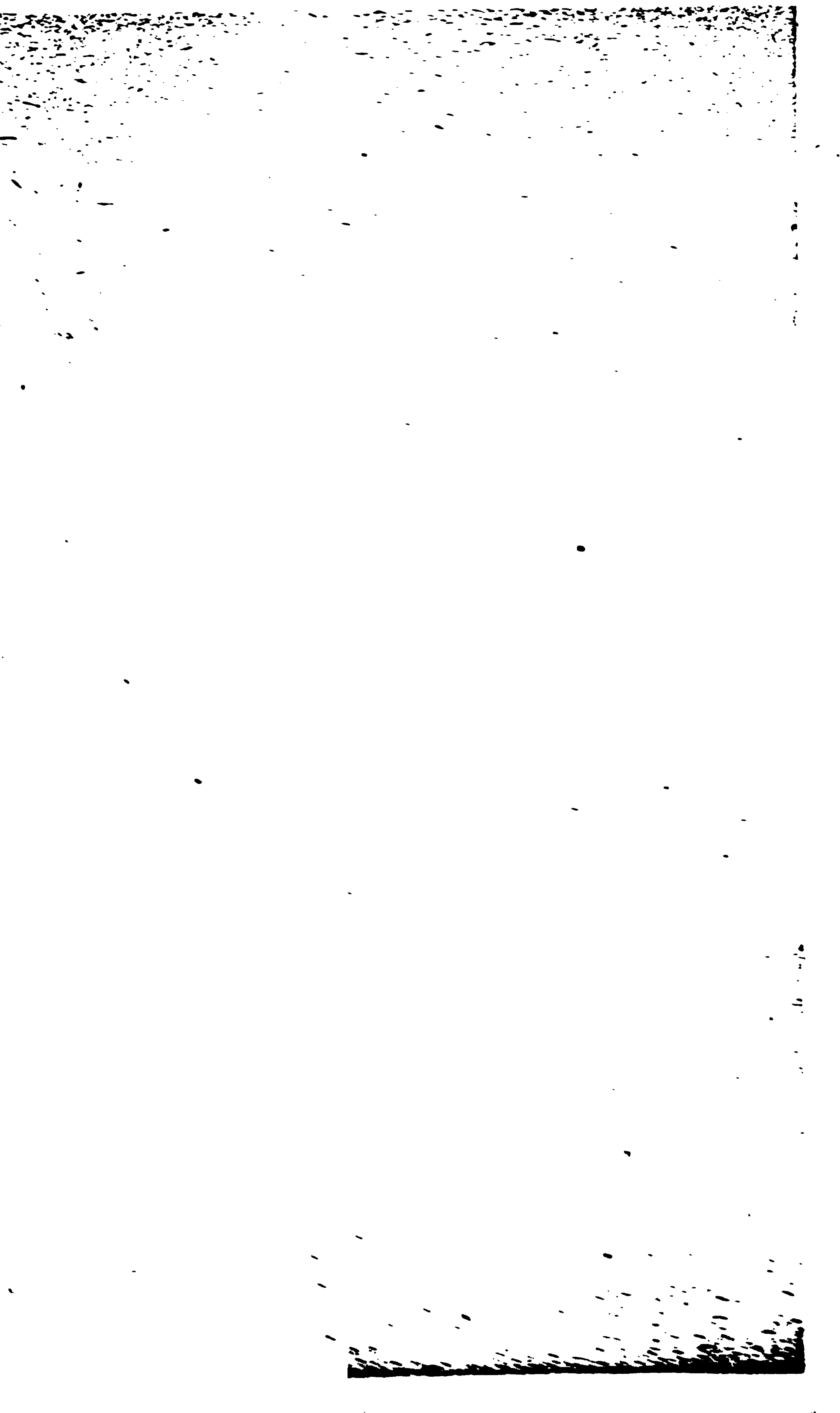
**LABOR COST PER TON OF MAKING MUCK BAR IRON AT A WELL KNOWN WORKS
IN GREAT BRITAIN.**

Month.	1877.	1878.	1879.	1880.	1881.	1882.	1887.	1888.	1889.	1890.
January	\$2.584	\$2.580	\$2.253	\$2.506	\$2.400	\$2.205	\$2.073	\$2.857	\$2.220	\$2.058
February	2.506	2.522	2.254	2.575	2.282	2.317	2.052	2.506	2.196	2.723
March	2.437	2.482	2.050	2.507	2.244	2.346	2.063	2.030	2.307	2.715
April	2.429	2.506	2.064	2.496	2.245	2.422	2.113	2.030	2.238	2.979
May	2.454	2.320	2.132	2.490	2.253	2.378	2.068	2.056	2.208	.....
June	2.498	2.414	2.030	2.385	2.220	2.508	2.030	2.064	2.372	.....
July	2.535	2.400	2.011	2.316	2.211	2.519	2.151	2.030	2.514	.....
August	2.567	2.347	2.062	2.316	2.273	2.547	2.153	2.040	^b 2.773	.....
September	2.405	2.332	2.008	2.374	2.106	2.637	2.030	2.005	2.411	.....
October	2.627	2.284	2.043	2.378	2.196	(a)	2.006	2.045	2.619	.....
November	2.536	2.208	2.190	2.373	2.149	(a)	2.000	2.058	2.625	.....
December	2.512	2.223	2.258	2.423	2.125	(a)	2.049	2.054	2.746	.....
Average	2.517	2.401	2.120	2.435	2.237	2.437	2.031	2.078	2.449	2.700

^a The books containing costs for this month were lost or mislaid.

^b Holidays this month, and small production caused increased labor cost.

FINISHED BAR IRON.



FINISHED BAR IRON.

The form of presentation of facts used in the tables under pig iron and muck bar iron has been followed in the case of finished bar iron also, as far as the different conditions surrounding its manufacture would allow. The titles of the table and sub-tables for finished bar iron are here shown:

TABLE III.—Cost of Production of Finished Bar Iron at Various Establishments in Various States.

- A.—Period covered and quantity of product.
- B.—Quantity and cost of materials used.
- C.—Proportions of materials used.
- D.—General statement of cost for the period.
- E.—Elements of cost in one ton of 2,240 pounds.
- F.—Per cent. of each element of cost in one ton of 2,240 pounds.
- G.—Additional cost of certain theoretical elements.
- H.—Additional cost of certain theoretical elements in one ton of 2,240 pounds.

• In all but two of the establishments from which reports were obtained more than one kind or description of bar iron was made, and the number of tons produced during the period and per day in each of these establishments, as shown in sub-table A, represents the quantity of all kinds of finished bar iron made. To this mixed product the generally descriptive term run of mill has been given in these tables. As a general rule two turns a day are worked on the first five week days and only one turn on Saturday, the mills shutting down Saturday night and continuing closed during Sunday. The days of running time, as shown in this table, are obtained for most of the establishments by dividing the total number of turns worked during the period by two, and hence the days of running time shown are days of two turns each and not the actual number of days on which work was done during the period. In establishments numbers 6 and 21 only one turn per day was worked, and the days of running time as shown for these establishments are therefore days of one turn each. In most of these establishments the principal material used is muck bar iron, and the finished bar iron is made directly therefrom. In some of the establishments, however, the principal material used is pig iron; this is made into muck bar, and this product is then made into finished bar iron. It is evident that these latter establishments must have a higher labor cost than those which start the process of manufacture with muck bar iron. This fact will explain the comparatively high cost of labor shown for some of the establishments in sub-tables D and E.

TABLE III.—COST OF PRODUCTION OF FINISHED BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT.

Establishment number.	Locality.	Period covered.		Finished bar iron produced.			Trains of rolls.
		Terminal dates.	Days of running time.	Description.	Tons of 2,240 pounds.		
					Total.	Per day.	
1	United States.	Jan. 5, 1886, to Jan. 4, 1890	235	Run of mill.	18,982	84	1
2	do	Sept. 1, 1889, to Nov. 30, 1889	72	Run of mill.	5,364	81	1
3	do	Nov. 1, 1889, to Jan. 31, 1890	89	Run of mill.	5,811	65	1
4	do	Feb. 1, 1889, to Jan. 31, 1890	220	Run of mill.	62,553	193	1
5	do	Jan. 1, 1889, to Dec. 31, 1889	183	Run of mill.	9,644	60	1
6	do	Jan. 1, 1889, to Dec. 31, 1889	253	Run of mill.	8,402	25	1
7	do	Jan. 1, 1889, to June 30, 1889	59	Run of mill.	2,100	35	1
8	do	July 1, 1888, to June 30, 1889	160	Run of mill.	12,445	78	1
9	do	July 1, 1888, to June 30, 1889	205	Run of mill.	7,434	27	1
10	do	July 1, 1888, to June 30, 1889	242	Run of mill.	8,645	36	1
11	do	July 1, 1888, to June 30, 1889	275	Run of mill.	12,708	50	1
12	do	Jan. 1, 1888, to Dec. 31, 1889	275	Run of mill.	7,800	29	1
13	do	Jan. 1, 1889, to Dec. 31, 1889	281	Run of mill.	24,229	80	1
14	do	1889 (c)	(d)	Run of mill.	(d)	(d)	(d)
15	do	July 1, 1888, to June 30, 1889	240	Run of mill.	16,750	70	1
16	do	Jan. 1, 1889, to Dec. 31, 1889	275	Run of mill.	8,630	32	1
17	do	Jan. 1, 1889, to Jan. 7, 1889	54	1 inch round.	168	36	1
18	do	Jan. 1, 1889, to Jan. 7, 1889	64	1 inch round.	237	34	1
19	do	Jan. 1, 1888, to Dec. 31, 1888	212	Run of mill.	8,008	29	1
20	do	July 1, 1888, to June 30, 1889	236	Run of mill.	4,006	17	1
21	do	July 1, 1888, to June 30, 1889	240	Run of mill.	2,588	10	1
22	Continent of Europe.	1889 (c)	(d)	Run of mill.	(d)	(d)	(d)
23	do	Oct. 1, 1889, to Dec. 31, 1889	75	Run of mill.	2,344	30	1
24	do	1889 (c)	(d)	(d)	(d)	(d)	(d)
25	do	Apr. 1, 1889, to June 30, 1889	(d)	Run of mill.	4,750	(d)	1
26	do	July 1, 1889, to Dec. 31, 1889	(d)	Run of mill.	3,342	(d)	1
27	do	Oct. 1, 1889, to Dec. 31, 1889	(d)	Run of mill.	5,726	(d)	1
28	Great Britain.	Apr. 1, 1888, to Sept. 29, 1888	117	Run of mill.	2,811	33	1
29	do	Nov. 1, 1888, to Oct. 31, 1889	275	Run of mill.	24,094	88	1

a This product includes considerable quantities of rails and splice bars, which are not separately reported.

b Only one turn per day is worked in this establishment.

c Terminal dates not reported.

d Not reported.

TABLE III.—COST OF PRODUCTION OF FINISHED BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

B.—QUANTITY AND COST OF MATERIALS USED.

(Establishments numbers 1 to 21 are in the United States; numbers 23 to 27 are on the continent of Europe; and numbers 28 and 29 are in Great Britain.)

Es- tablish- ment num- ber.	Tons of 2,240 pounds.				Cost.				
	Muck bar.	Pig iron.	Scrap.	Other.	Muck bar.	Pig iron.	Scrap.	Other.	Total.
1	12,966		8,644		\$310,045		\$228,800		\$538,845
2	\$ 4,371		(a)		\$ 169,599		(a)		169,599
3	1,510		2,848		42,280		60,423		102,703
4	\$ 49,000		(a)		\$ 977,184		(a)		977,184
5	7,221	2,968	b 2,436		\$109,319	51,912	b \$15,487		176,718
6	4,607	1,698	b 1,200		67,606	23,606	b 9,000		105,302
7	1,453			c 848	48,699			c 34,937	81,836
8	10,240		3,412		285,715		72,468		358,203
9	7,657		179		210,652		3,800		214,452
10	8,653		1,771		227,580		49,635		277,215
11	8,803		9,229		158,537		243,191		391,728
12	8,200		491		230,127		12,650		242,777
13	17,578		10,726		486,997		300,323		787,320
14	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)
15		17,400	1,841	b 9,000		243,000	22,500	b 21,000	267,790
16	3,150		6,384		85,000		167,412		242,412
17		231		b 58		3,606		b 347	4,043
18		347		b 74		5,552		b 448	6,000
19		5,289	1,806	b 371		63,744	84,783	b 742	109,299
20	4,060		312		109,281		7,462		116,743
21	567		2,212		16,616		68,546		85,162
22	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)
23	3,486				52,856				52,856
24	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)
25	e 5,932		(e)	(e)	\$110,581		(e)	(e)	110,581
26	e 6,819		(e)	(e)	\$125,932		(e)	(e)	125,932
27	e 6,986		(e)	(e)	\$144,810		(e)	(e)	144,810
28	4,508			f 110	65,929			f 2,018	67,947
29	30,470				483,628				483,628

a The quantity and cost of scrap are inseparably combined with the quantity and cost of muck bar.

b Iron ore.

c Reworked muck bar.

d Not reported.

e The quantities and costs of scrap and other material (roughed-down bar) are inseparably combined with the quantity and cost of muck bar.

f Roughed-down bar.

TABLE III.—COST OF PRODUCTION OF FINISHED BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

D.—GENERAL STATEMENT OF COST FOR THE PERIOD.

[Establishments numbered 1 to 21 are in the United States; numbers 22 to 27 are on the continent of Europe; and numbers 28 to 29 are in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Estab- lish- ment num- ber.	Materials.			Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
	Gross.	Value of cinder, scrap, etc.	Net.						
1.....	\$538,833	(a)	\$4538,833	\$90,798	\$6,898	\$16,088	\$44,443	\$987	\$,4987,518
2.....	100,569	\$450	100,119	33,147	4,508	8,362	3,221	450	219,618
3.....	102,705	5,619	98,086	20,881	324	4,065	1,216	187	137,103
4.....	977,184	7,490	980,784	220,932	26,223	21,296	44,977	2,290	1,294,412
5.....	176,713	3,502	174,211	100,325	10,006	19,830	7,988	1,454	233,517
6.....	105,303	3,000	102,303	80,182	7,509	22,316	5,624	1,600	220,494
7.....	81,836	2,388	78,447	15,773	1,323	6,685	2,736	1,600	109,434
8.....	358,203	13,385	339,658	42,632	5,371	6,838	7,883	1,137	403,430
9.....	214,452	2,580	211,872	31,359	5,590	9,090	4,111	97	233,118
10.....	277,231	3,388	273,843	40,385	4,109	9,312	4,782	138	323,631
11.....	381,728	8,328	373,400	41,589	9,485	18,484	23,046	2,040	467,430
12.....	242,777	7,800	235,277	28,384	4,006	6,250	6,050	(a)	\$290,411
13.....	787,023	7,880	779,023	96,418	11,728	56,352	20,712	433	\$72,081
14.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
15.....	287,700	(a)	\$287,700	219,450	12,280	32,090	20,000	4,400	\$544,800
16.....	242,412	4,805	237,607	82,308	3,800	9,578	13,434	437	304,140
17.....	4,043	387	3,656	2,404	98	808	357	40	7,722
18.....	5,998	238	5,760	3,641	149	1,114	689	65	11,883
19.....	106,298	3,120	104,149	85,056	8,882	27,817	21,616	753	203,396
20.....	118,754	2,720	116,034	21,708	1,083	4,397	2,500	720	145,461
21.....	65,361	800	64,461	14,707	2,080	4,094	2,400	250	80,131
22.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
23.....	52,886	2,562	50,092	8,388	831	2,219	2,300	517	60,497
24.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
25.....	110,561	8,179	102,382	8,897	/3,898	1,308	2,782	(/)	119,247
26.....	125,832	9,629	116,103	9,920	/1,327	1,206	2,875	(/)	132,081
27.....	144,816	13,498	132,350	10,862	/2,186	1,769	2,096	(/)	150,008
28.....	67,847	374	67,073	9,783	142	2,763	2,671	60	82,338
29.....	482,628	19,782	462,836	72,020	3,460	27,115	10,828	2,294	500,661

a Not reported.

b Value of cinder, scrap, etc., not deducted.

c Supplies only, repairs not included.

d Not including repairs.

e Not including taxes.

f The expenditures for taxes are inseparably combined with those for officials and clerks.

TABLE III.—COST OF PRODUCTION OF FINISHED BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

E.—ELEMENTS OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 21 are in the United States; numbers 22 to 27 are on the continent of Europe, and numbers 28 and 29 are in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery, are not indicated.]

Estab- lish- ment num- ber	Materials					Value of cra- der. scrap, etc.	Net	La- bor	Off- cials and clerks	Fuel	Sup- plies and re- pairs	Taxes	Total
	Green				Total								
	Muck bar.	Pig iron.	Scrap.	Other.									
1	516.334		512.658		528.332	a	528.332	528.332	528.332	528.332	528.332	528.332	528.332
2	28.917				28.917	b	28.917	28.917	28.917	28.917	28.917	28.917	28.917
3	11.901		25.856		37.757		37.757	37.757	37.757	37.757	37.757	37.757	37.757
4	22.964				22.964		22.964	22.964	22.964	22.964	22.964	22.964	22.964
5		511.225	5.263	51.006	527.494		527.494	527.494	527.494	527.494	527.494	527.494	527.494
6		14.240	4.483	51.405	529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
7				51.637	529.128	1	529.128	529.128	529.128	529.128	529.128	529.128	529.128
8			5.829		529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
9					529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
10			5.741		529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
11	10.409		17.025		529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
12	19.574		1.000		529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
13	19.124		12.047		529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
14	20.200				529.128	1	529.128	529.128	529.128	529.128	529.128	529.128	529.128
15		14.543	1.343	51.290	529.128	b	529.128	529.128	529.128	529.128	529.128	529.128	529.128
16	9.617		17.600		529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
17		14.067		51.732	529.128	1	529.128	529.128	529.128	529.128	529.128	529.128	529.128
18		14.004		51.542	529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
19		11.301	6.047	51.122	529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
20	27.200		1.000		529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
21	6.028		19.127		529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
22	17.649				529.128	b	529.128	529.128	529.128	529.128	529.128	529.128	529.128
23	17.846				529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
24	19.951				529.128	1	529.128	529.128	529.128	529.128	529.128	529.128	529.128
25	16.615		.757	53.344	529.128	1	529.128	529.128	529.128	529.128	529.128	529.128	529.128
26	17.314		.064	53.500	529.128	1	529.128	529.128	529.128	529.128	529.128	529.128	529.128
27	17.650		.525	53.313	529.128	1	529.128	529.128	529.128	529.128	529.128	529.128	529.128
28	17.240			53.200	529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128
29	22.972				529.128		529.128	529.128	529.128	529.128	529.128	529.128	529.128

- a Not reported.
- b Value of cruder, scrap, etc., not deducted.
- c Supplies only, repairs not included.
- d Not including repairs.
- e The expenditures for scrap are inseparably combined with those for muck bar.
- f Iron ore.
- g Reworked muck bar.
- h Not including taxes.
- i The expenditures for taxes, insurance, and interest are inseparably combined with those for off-
cials and clerks.
- j Including insurance and interest.
- k The expenditures for taxes and insurance are inseparably combined with those for officials and
clerks.
- l Including insurance.
- m Roughed-down bar.
- n The expenditures for taxes are inseparably combined with those for officials and clerks.

TABLE III.—COST OF PRODUCTION OF FINISHED BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

F.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 21 are in the United States; numbers 22 to 27 are on the continent of Europe; and numbers 28 and 29 are in Great Britain. This table is based on the preceding one, and to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader is referred to that table for such information as they furnish.]

Estab- lishment number.	Materials (net).	Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
1	81.90	13.81	.99	2.45	.67	.09	100
2	77.29	15.15	2.05	3.82	1.48	.21	100
3	77.95	16.43	.65	3.91	.95	.11	100
4	74.92	17.07	1.95	2.43	3.47	.17	100
5	53.89	33.97	3.09	6.13	2.47	.45	100
6	46.42	36.37	3.40	10.57	2.56	.68	100
7	72.87	14.46	1.67	6.11	3.42	1.47	100
8	81.20	10.57	1.31	1.69	1.95	.28	100
9	81.80	12.10	2.12	2.35	1.59	.04	100
10	82.11	12.11	1.23	2.79	1.72	.04	100
11	79.56	8.90	2.02	3.96	4.93	.63	100
12	83.90	10.30	1.43	2.23	2.14	.....	100
13	80.07	9.49	1.20	5.09	3.16	.09	100
14	78.65	11.86	2.46	2.61	4.42	.....	100
15	49.19	37.52	2.10	5.47	4.90	.82	100
16	78.13	12.95	1.18	3.15	4.45	.14	100
17	49.28	31.13	1.28	10.46	7.21	.64	100
18	59.39	31.96	1.31	9.78	5.99	.57	100
19	41.94	34.26	3.58	11.20	8.72	.30	100
20	78.40	14.92	.71	3.02	2.45	.50	100
21	73.15	16.12	2.27	5.33	2.73	.40	100
22	72.09	16.50	4.00	3.29	4.12	.....	100
23	75.33	12.59	1.25	4.99	5.36	.48	100
24	83.54	7.76	2.46	3.49	2.75	.....	100
25	86.58	7.63	1.64	1.07	3.18	.....	100
26	87.90	7.51	1.38	.96	2.25	.....	100
27	88.23	7.11	1.42	1.18	2.06	.....	100
28	81.15	11.84	.17	3.34	3.12	.08	100
29	79.06	12.45	.59	4.62	2.89	.39	100

TABLE III.—COST OF PRODUCTION OF FINISHED BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.**G.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS.**

[Establishments numbers 1 to 21 are in the United States; numbers 22 to 27 are on the continent of Europe; and numbers 28 and 29 are in Great Britain.]

Establishment number.	Additional cost.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1.....	\$845	\$2,415		\$3,260
2.....	400			400
3.....	22			22
4.....	700	(a)		b 700
5.....	321			321
6.....	500			500
7.....	230	8,267		8,497
8.....	400	1,221	\$2,661	4,282
9.....	125		2,500	2,625
10.....	245			245
11.....	733			733
12.....	400			400
13.....	1,120			1,120
14.....	(a)	(a)	(a)	(a)
15.....	2,000	(a)	(a)	c 2,000
16.....	817	6,000	6,000	11,317
17.....	27	210		237
18.....	30	205		235
19.....	801	6,000		6,801
20.....	312	420		732
21.....	150			150
22.....	(a)			(a)
23.....	817			817
24.....	(a)			(a)
25.....				
26.....				
27.....				
28.....				
29.....	332	30,584		30,916

a Not reported.

b Not including interest.

c Not including interest and depreciation of value of plant.

TABLE III.—COST OF PRODUCTION OF FINISHED BAR IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Concluded.

H.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 21 are in the United States; numbers 22 to 27 are on the continent of Europe; and numbers 28 and 29 are in Great Britain.]

Establishment number.	Additional cost per ton.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1.....	\$0.045	\$0.127	.....	\$0.172
2.....	.068	.....	.....	.068
3.....	.006	.....	.....	.006
4.....	.016	(a)	.....	b.016
5.....	.033	.....	.....	.033
6.....	.078	.....	.....	.078
7.....	.109	1.556	.....	1.665
8.....	.032	.098	\$0.214	.344
9.....	.016	.....	.527	.343
10.....	.028	.....	.....	.023
11.....	.053	.....	.....	.053
12.....	.051	.....	.....	.051
13.....	.045	.....	.....	.045
14.....	(a)	(a)	(a)	(a)
15.....	.119	(a)	(a)	c.119
16.....	.036	.679	.565	1.280
17.....	.136	.....	.....	.136
18.....	.101	.690	.....	.791
19.....	.132	.986	.....	1.118
20.....	.078	.105	.....	.183
21.....	.059	.....	.....	.059
22.....	(a)	.....	.....	(a)
23.....	.108	.....	.....	.108
24.....	(a)	.....	.....	(a)
25.....	.....	.....	.....	.....
26.....	.....	.....	.....	.....
27.....	.....	.....	.....	.....
28.....	.....	.....	.....	.....
29.....	.014	1.269	.....	1.283

a Not reported.

b Not including interest.

c Not including interest and depreciation of value of plant.

SUMMARY OF COST OF FINISHED BAR IRON (RUN OF MILL) IN TEN ESTABLISHMENTS IN THE UNITED STATES.

[This summary is drawn from sub-tables A to H immediately preceding. The establishments covered are numbers 1, 2, 4, 7 to 10, inclusive, 12, 13, and 20 and are those only in which muck bar iron is the principal material used. As may be seen the periods covered are usually twelve months and are in the years 1888, 1889, and 1890. By run of mill is meant the product of all kinds of finished bar iron made in an establishment.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 185,027.	Average cost of one.
Materials (net).....	\$3,711,780	\$27.489
Labor.....	618,040	4.877
Officials and clerks.....	69,688	.516
Fuel.....	153,637	1.138
Supplies and repairs.....	114,403	.848
Taxes.....	7,731	.057
Total.....	4,675,279	24.625

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[All ten establishments gave the amount paid for insurance; the aggregate of these makes the sum credited to this item below. Four establishments gave the amount paid for interest; the aggregate of these makes the sum below. Five reported that there was no expenditure for interest, and for one no statement was obtained. Two establishments gave the amount charged to depreciation; the aggregate of these makes the sum below. Eight reported that nothing was charged to this item. The aggregates entered in the first column below are, of course, apportioned in the second column among the whole ten establishments.]

Insurance.....	\$4,777	\$0.036
Interest.....	7,323	.054
Depreciation of value of plant.....	5,161	.038
Total.....	17,261	.128

SUMMARY OF COST OF FINISHED BAR IRON (RUN OF MILL) IN FOUR ESTABLISHMENTS ON THE CONTINENT OF EUROPE.

[This summary is drawn from the preceding sub-tables A to H. The establishments covered are numbers 23 and 25 to 27, inclusive, being all the finished bar iron mills on the continent of Europe from which full reports were obtained. In all these establishments muck bar iron is the principal material used. As may be seen the periods covered are irregular and are in the year 1889. By run of mill is meant the product of all kinds of finished bar iron made in an establishment.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 18,762.	Average cost of one.
Materials (net).....	\$400,928	\$21.389
Labor.....	37,847	2.017
Officials and clerks.....	a 7,049	a.376
Fuel.....	7,622	.406
Supplies and repairs.....	13,392	.714
Taxes.....	(a)	(a)
Total.....	466,838	24.882

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[One establishment gave the amount paid for insurance, which makes the sum credited to this item below. Three reported that they had no insurance. All four establishments reported that there was no expenditure for interest, and that nothing was charged to depreciation. The sum entered in the first column below is, of course, apportioned in the second column among the whole four establishments.]

Insurance.....	\$317	\$0.017
Interest.....		
Depreciation of value of plant.....		
Total.....	317	.017

a The expenditures for taxes are inseparably combined with those for officials and clerks.

SUMMARY OF COST OF FINISHED BAR IRON (RUN OF MILL) IN TWO ESTABLISHMENTS IN GREAT BRITAIN.

[This summary is drawn from the preceding sub-tables A to H. The establishments covered are numbers 28 and 29, being all the finished bar iron mills in Great Britain from which reports were obtained. In both these establishments muck bar iron is the principal material used. As may be seen the periods covered are irregular and are in the years 1888 and 1889. By run of mill is meant the product of all kinds of finished bar iron made in an establishment.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 27,905.	Average cost of one.
Materials (net)	\$530,909	\$19.026
Labor	82,782	2.967
Officials and clerks	3,602	.129
Fuel	29,868	1.070
Supplies and repairs	19,409	.699
Taxes	2,354	.084
Total	669,014	23.975

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[One establishment gave the amount paid for insurance, which makes the sum credited to this item below. One reported that it had no insurance. One establishment gave the amount paid for interest, which makes the sum below. One reported that there was no expenditure for interest. Both establishments reported that nothing was charged to depreciation. The sums entered in the first column below are, of course, apportioned in the second column between the two establishments.]

Insurance	\$332	\$0.012
Interest	30,584	1.096
Depreciation of value of plant		
Total	30,916	1.108

These tables relate to a mixture of various kinds of finished bar iron, as stated in the notes. For the United States, as shown by ten establishments, finished bar iron costs \$34.625, and if the theoretical elements of cost—insurance, interest, and depreciation of value of plant—be added, the figures would be increased only 12.8 cents. The cost of finished bar iron on the continent of Europe, as shown by four establishments, is \$24.882, and the additional cost, as given by the establishments returning theoretical elements, is 1.7 cent. For Great Britain, as shown by two representative establishments, the average cost of one ton of finished bar iron for the two establishments is \$23.975; one establishment, however, added insurance and interest on a very liberal scale, the addition amounting to \$1.108 per ton.

LABOR COST PER TON OF MAKING FINISHED BAR IRON IN GREAT BRITAIN.

The following table shows the labor cost per ton of making finished bar iron in a well known establishment in Great Britain for various periods from 1877 to 1890, inclusive. By labor cost in the succeeding table is meant the cost of converting pig iron into finished bar, the direct labor cost in the processes preceding not being included. These costs relate to a well known establishment, and were made up for the information of the head of the firm.

LABOR COST PER TON OF MAKING FINISHED BAR IRON AT A WELL KNOWN WORKS
IN GREAT BRITAIN.

[The labor cost here shown is on the production for the month without regard to sizes or kinds of iron turned out. The tonnage rate paid rollers, etc., varies greatly, perhaps fifty different rates being paid, as the product includes various sizes, kinds, and weights, the separate labor cost for each kind not being made up.]

Month.	1877.	1878.	1879.	1880.	1881.	1882.	1887.	1888.	1889.	1890.
January	\$3.541	\$3.305	\$3.210	\$3.429	\$3.292	\$2.858	\$3.105	\$2.555	\$2.705	\$3.550
February	3.326	3.088	2.855	3.243	2.260	3.213	2.774	2.603	2.617	3.730
March	2.905	3.159	2.970	3.277	3.244	3.287	2.816	2.937	2.728	3.903
April	3.247	3.267	2.817	3.237	3.104	3.387	3.090	3.059	2.730	d 4.018
May	3.197	3.269	3.065	3.244	2.061	3.352	3.141	3.046	2.790	.....
June	3.228	3.034	3.135	3.428	2.182	3.233	3.029	3.094	2.847	.....
July	3.191	3.102	3.053	3.430	2.805	3.335	3.018	3.073	3.070	.....
August	3.294	3.050	2.968	3.404	3.101	3.368	3.124	2.912	b 3.575	.....
September	3.246	3.000	3.120	3.446	3.020	3.227	2.950	2.812	3.179	.....
October	3.449	3.002	3.073	3.439	3.005	(a)	2.740	2.675	3.128	.....
November	3.373	3.212	2.675	3.625	2.973	(a)	2.723	3.617	3.232	.....
December	3.302	3.181	3.650	3.365	2.964	(a)	2.653	2.737	c 3.845	.....
Average....	3.373	3.188	3.011	3.388	3.098	3.273	2.930	2.847	3.067	3.778

- a The books containing costs for this month were lost or mislaid.
- b Holidays and consequent small production increased labor cost this month.
- c General advance in wages.
- d Wages were advanced.

PRICES OF FINISHED BAR IRON.

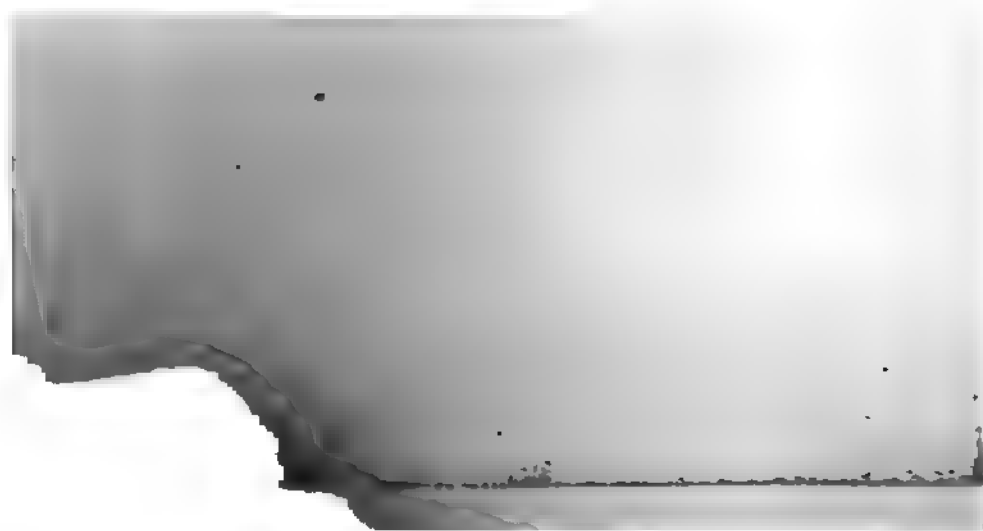
The following table shows the average monthly wholesale prices of best refined rolled bar iron at Philadelphia, for each month from January, 1844, to December, 1889. It is taken from the annual report for 1889 of the American Iron and Steel Association.

AVERAGE WHOLESALE STORE PRICES PER TON OF 2,240 POUNDS OF BEST REFINED ROLLED BAR IRON AT PHILADELPHIA.

Y'r.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Aver- age.
1844	\$90.00	\$90.00	\$90.00	\$90.00	\$90.00	\$82.50	\$82.50	\$82.50	\$82.50	\$82.50	\$82.50	\$82.50	\$85.62
1845	82.50	87.50	92.50	100.00	100.00	100.00	95.00	92.50	92.50	92.50	95.00	95.00	93.75
1846	95.00	95.00	90.00	92.50	92.50	92.50	95.00	92.50	90.00	90.00	90.00	85.00	91.66
1847	85.00	85.00	85.00	85.00	85.00	90.00	90.00	85.00	87.50	85.00	85.00	85.00	86.04
1848	85.00	85.00	85.00	85.00	85.00	80.00	80.00	80.00	75.00	75.00	67.50	70.00	79.33
1849	70.00	70.00	70.00	70.00	70.00	70.00	65.00	65.00	65.00	65.00	65.00	65.00	67.50
1850	65.00	65.00	65.00	62.50	60.00	57.50	57.50	57.50	57.50	56.00	56.00	55.00	59.54
1851	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	54.00	54.00	54.00	54.00	54.66
1852	54.00	54.00	52.50	52.50	52.50	52.50	52.50	55.00	60.00	70.00	70.00	80.00	58.79
1853	90.00	90.00	90.00	87.50	85.00	80.00	80.00	77.50	77.50	80.00	80.00	85.00	83.50
1854	90.00	90.00	90.00	90.00	90.00	92.50	95.00	95.00	95.00	92.50	90.00	90.00	91.23
1855	82.50	80.00	75.00	72.50	70.00	70.00	70.00	72.50	72.50	75.00	77.50	77.50	74.58
1856	75.00	77.50	77.50	77.50	75.00	72.50	70.00	70.00	72.50	72.50	72.50	72.50	73.75
1857	72.50	72.50	72.50	72.50	72.50	72.50	70.00	70.00	70.00	70.00	70.00	67.50	71.04
1858	65.00	65.00	65.00	62.50	62.50	65.00	62.50	60.00	60.00	60.00	60.00	60.00	62.29
1859	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
1860	60.00	57.50	57.50	57.50	57.50	57.50	57.50	60.00	60.00	60.00	60.00	60.00	58.75
1861	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	62.50	62.50	62.50	62.50	60.83
1862	62.50	62.50	62.50	62.50	65.00	65.00	70.00	72.50	75.00	77.50	82.50	87.50	70.12
1863	87.50	90.00	90.00	90.00	90.00	87.50	87.50	87.50	87.50	90.00	95.00	110.00	91.04
1864	115.00	125.00	130.00	140.00	150.00	160.00	165.00	170.00	160.00	150.00	147.50	145.00	146.46
1865	142.50	135.00	130.00	110.00	100.00	92.50	90.00	85.00	92.50	95.00	100.00	105.00	106.38
1866	105.00	100.00	97.50	95.00	92.50	95.00	105.00	100.00	100.00	97.50	95.00	95.00	98.13
1867	95.00	92.50	92.50	90.00	87.50	87.50	85.00	82.50	82.50	82.50	82.50	85.00	87.08
1868	85.00	85.00	85.00	87.50	87.50	87.50	85.00	85.00	85.00	85.00	85.00	85.00	86.63
1869	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50	80.00	80.00	80.00	80.00	81.66
1870	80.00	77.50	77.50	77.50	75.00	77.50	80.00	85.00	82.50	80.00	77.50	77.50	78.96
1871	72.50	75.00	75.00	77.50	75.00	77.50	77.50	80.00	82.50	82.50	82.50	85.00	78.54
1872	73.92	78.40	87.36	94.08	96.32	98.56	103.04	105.28	107.52	118.72	107.52	100.80	97.63
1873	96.32	94.08	96.32	94.08	94.08	91.84	85.12	82.88	80.64	76.16	73.92	71.68	86.43
1874	73.92	73.92	71.68	71.68	67.20	67.20	62.72	67.20	67.20	67.20	62.72	62.72	67.95
1875	62.72	60.48	62.72	62.72	62.72	62.72	62.72	60.48	60.48	60.48	56.00	56.00	60.85
1876	56.00	52.64	52.64	52.64	52.64	52.64	52.64	52.64	50.40	50.40	50.40	49.28	52.08
1877	48.72	47.60	47.04	44.80	44.80	44.80	44.80	44.80	44.80	44.80	44.80	44.80	45.55
1878	44.80	44.80	44.80	44.80	44.80	44.80	44.80	44.80	44.80	42.56	42.56	42.56	44.24
1879	40.32	42.56	44.80	44.80	44.80	44.80	47.04	49.28	57.12	67.20	67.20	72.24	51.85
1880	80.64	85.12	82.32	71.68	56.00	51.07	50.02	53.76	54.88	52.64	52.64	53.76	60.38
1881	56.00	56.00	56.00	56.00	53.76	53.76	54.88	57.12	60.48	62.72	64.96	64.96	58.05
1882	64.96	67.20	67.20	62.72	59.24	60.48	60.48	60.48	60.48	60.48	58.24	56.00	61.41
1883	53.76	52.64	51.52	50.40	50.40	50.40	50.40	49.28	49.28	49.28	49.28	47.04	50.30
1884	44.80	44.80	44.80	44.80	44.80	44.80	44.80	44.80	42.56	42.56	42.56	42.56	44.05
1885	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32
1886	41.44	42.56	42.56	42.56	42.56	42.56	42.56	42.56	43.68	44.80	44.80	44.80	43.13
1887	48.16	50.40	51.52	51.52	51.52	49.28	49.28	49.28	49.28	48.16	47.04	47.04	49.37
1888	49.28	49.28	47.04	43.68	42.56	41.44	42.56	42.56	44.80	47.04	44.80	44.80	44.99
1889	44.80	42.56	40.32	40.32	41.44	42.56	42.56	43.68	43.68	44.80	45.92	48.16	43.40

The highest price in any month in the above table was reached in August, 1864, \$170; the lowest price in January, 1879, throughout 1885, and in March and April, 1889, \$40.32.

1870



MISCELLANEOUS IRON.

MISCELLANEOUS IRON

The titles of Table IV and its sub-tables are as follows:

TABLE IV.—*Cost of Production of Miscellaneous Iron at Various Establishments in Various States.*

- A.—Period covered and quantity of product.
- B.—Quantity and cost of materials used.
- C.—Proportions of materials used.
- D.—General statement of cost for the period.
- E.—Elements of cost in one ton of 2,240 pounds.
- F.—Per cent. of each element of cost in one ton of 2,240 pounds.
- G.—Additional cost of certain theoretical elements.
- H.—Additional cost of certain theoretical elements in one ton of 2,240 pounds.

In these tables are shown the costs of certain miscellaneous iron products such as beams, plates, rails, sheet iron, etc. In most cases an establishment produces several different articles of numerous sizes, and the cost is for the mixed product. The leading product is that mentioned in the column of description; sometimes that is the only product though there may be several sizes. Of course, the results would have been much more valuable if the facts for each particular article or size had been shown separately, but the account books of the establishments would not allow of this. Manufacturers in this line of products do not devote themselves to specialties to an extent that would permit definite units to be selected for investigation; still the results are likely to have a certain value sufficient to warrant their presentation here.

The tables need very little explanation. Note should be taken of the varying materials used for obtaining a like product as this may affect not only the total cost, but the sub-division of cost between labor and materials. For instance, establishment number 15 uses muck bar iron to make ship and boiler plates. Of course there will be a very low cost for labor here compared with establishments 12, 13, and 14 which use pig iron and iron ore.

MINERAL LABOR

WISCONSIN'S IRON AT UNITED STATES.

QUANTITY OF PRODUCT.

Lump-iron has produced.			
Description.	Tons of 2,240 pounds.		Trains of rolls.
	Total.	Per day.	
1. Pig-iron (open).....	18,872	124	4
2. Pig-iron (closed).....	1,448	(a)	(a)
3. Pig-iron (closed).....	1,494	(a)	(a)
4. Pig-iron (closed).....	1,798	(a)	(a)
5. Pig-iron (closed).....	(a)	(a)	(a)
6. Pig-iron (closed).....	10,301	37	1
7. Pig-iron (closed).....	(a)	(a)	(a)
8. Pig-iron (closed).....	27,157	94	1
9. Pig-iron (closed).....	14,060	48	1
10. Pig-iron (closed).....	(a)	(a)	(a)
11. Pig-iron (closed).....	(a)	(a)	(a)
12. Pig-iron (closed).....	225	20	3
13. Pig-iron (closed).....	50	19	1
14. Pig-iron (closed).....	800	73	3
15. Pig-iron (closed).....	12,821	101	(a)
16. Pig-iron (closed).....	107	7	5
17. Pig-iron (closed).....	435	8	5
18. Pig-iron (closed).....	728	14	5
19. Pig-iron (closed).....	8,189	41	2
20. Pig-iron (closed).....	(a)	(a)	(a)

a. The terminal dates are not reported.

TABLE IV.—COST OF PRODUCTION OF MISCELLANEOUS IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

B.—QUANTITY AND COST OF MATERIALS USED.

(Establishments numbers 1, 12 to 14, and 19 to 19 are in the United States; numbers 2 to 11, and 20 are on the continent of Europe; and number 18 is in Great Britain.)

Establishment number.	Tons of 2,240 pounds.				Cost.				
	Wreck bar.	Pig iron.	Scrap.	Other.	Wreck bar.	Pig iron.	Scrap.	Other.	Total.
1		17,850	2,230	a 3,187		\$288,250	\$39,375	a \$16,723	\$342,357
2	b 1,613		(b)		\$28,418		384		28,802
3	b 1,084		(b)		31,467		345		31,792
4	b 1,929		(b)		36,027		554		37,481
5	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
6	7,929		7,505	d 326	128,283		77,284	d 4,716	213,269
7	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
8	c 24,611		431	d 350	a 594,637		4,439	d 9,326	599,433
9	a 15,133		2,521	d 251	a 258,760		30,245	d 4,261	299,256
10	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
11	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
12		252		(f)		3,790		a 363	4,143
13		63		a 13		1,000		a 70	1,070
14		1,000		a 200		18,000		a 1,200	17,200
15	16,392		838	d 353	263,936		7,166	d 3,706	274,831
16		134		(f)		2,348		a 182	2,530
17		644		(f)		9,537		a 758	12,464
18		907		a 206		18,918		a 1,234	20,896
19	8,911				249,741				249,741
20	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)

a Iron ore.

b The quantity of scrap is inseparably combined with the quantity of wreck bar.

c Not reported.

d Old rails.

e Wreck bar and roughed-down bar.

f Iron ore is used, but the quantity is not reported.

TABLE IV.—COST OF PRODUCTION OF MISCELLANEOUS IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT.

Establishment number.	Locality.	Period covered.		Days of running time.	Miscellaneous iron produced.			Trains of rolls.
		Terminal dates.	Description.		Tons of 2,240 pounds.			
					Total.	Per day.		
1	United States.	Aug. 11, 1888, to Aug. 10, 1889	152	Bars and plates	18,673	124	4	
2	Continent of Europe.	Apr. 1, 1889, to June 16, 1889	(a)	Bars (half finished)	1,443	(a)	(a)	
3	do	July 1, 1888, to Sept. 30, 1889	(a)	Bars (half finished)	1,494	(a)	(a)	
4	do	Oct. 1, 1888, to Dec. 31, 1889	(a)	Bars (half finished)	1,798	(a)	(a)	
5	do	1889 (b)	(a)	Bars (roughed-down)	(a)	(a)	(a)	
6	do	Jan. 1, 1889, to Dec. 31, 1889	296	Bars (roughed-down)	15,961	37	1	
7	do	1889 (b)	(a)	Beams	(a)	(a)	(a)	
8	do	Jan. 1, 1889, to Dec. 31, 1889	296	Beams, plates, etc.	27,157	94	1	
9	do	Jan. 1, 1888, to Dec. 31, 1889	295	Beams, rails, etc.	16,060	48	1	
10	do	1889 (b)	(a)	Plates	(a)	(a)	(a)	
11	do	1889 (b)	(a)	Plates (ordinary quality).	(a)	(a)	(a)	
12	United States	June 3, 1889, to June 16, 1889	11	Plates (boiler).....	225	20	2	
13	do	June 2, 1889, to June 7, 1889	5	Plates (sine).....	50	10	1	
14	do	Jan. 1, 1889, to Jan. 14, 1889	11	Plates (tank).....	800	73	2	
15	Great Britain	Jan. 1, 1888, to June 30, 1889	127	Plates (boiler, ship, etc.)	12,623	101	(a)	
16	United States	Oct. 1, 1889, to Oct. 17, 1889	15	Sheet iron.....	107	7	5	
17	do	July 1, 1889, to Sept. 30, 1889	64	Sheet iron.....	435	8	5	
18	do	July 1, 1889, to Dec. 31, 1889	61	Sheet iron.....	728	14	9	
19	do	Jan. 1, 1889, to Dec. 31, 1889	196	Skelp iron.....	8,189	41	2	
20	Continent of Europe.	1889 (b)	(a)	Slabs.....	(a)	(a)	(a)	

a Not reported.

b The terminal dates are not reported.

TABLE IV.—COST OF PRODUCTION OF MISCELLANEOUS IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

B.—QUANTITY AND COST OF MATERIALS USED.

[Establishments numbers 1, 12 to 14, and 16 to 19 are in the United States; numbers 2 to 11, and 20 are on the continent of Europe; and number 15 is in Great Britain.]

Establishment number.	Tons of 2,240 pounds.				Cost.				
	Muck bar.	Pig iron.	Scrap.	Other.	Muck bar.	Pig iron.	Scrap.	Other.	Total.
1	.....	17,850	2,250	a 3,187	.....	\$288,250	\$39,375	a \$16,723	\$342,347
2	b 1,613	.....	(b)	.....	\$28,418	.....	384	.....	28,802
3	b 1,984	.....	(b)	.....	31,407	.....	386	.....	31,793
4	b 1,929	.....	(b)	.....	26,027	.....	654	.....	26,681
5	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
6	7,929	.....	7,505	d 828	128,293	.....	77,264	d 8,716	212,263
7	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
8	e 34,611	.....	481	d 550	e 366,657	.....	4,438	d 9,328	800,423
9	e 15,133	.....	2,521	d 251	e 258,750	.....	26,245	d 4,261	299,254
10	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
11	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
12	.....	252	.....	(f)	.....	2,790	.....	a 383	4,143
13	.....	63	.....	a 13	.....	1,000	.....	a 70	1,070
14	.....	1,000	.....	a 200	.....	16,000	.....	a 1,200	17,200
15	16,322	.....	638	d 352	263,936	.....	7,166	d 3,700	274,831
16	.....	184	31	(f)	.....	2,340	339	a 182	2,857
17	.....	644	74	(f)	.....	9,537	2,189	a 738	12,464
18	.....	907	123	a 206	.....	18,918	3,654	a 1,234	20,806
19	8,911	.....	.....	.....	249,741	.....	.....	.....	249,741
20	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)

a Iron ore.

b The quantity of scrap is inseparably combined with the quantity of muck bar.

c Not reported.

d Old rails.

e Muck bar and roughed-down bar.

f Iron ore is used, but the quantity is not reported.

TABLE IV.—COST OF PRODUCTION OF MISCELLANEOUS IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

C.—PROPORTIONS OF MATERIALS USED.

[Establishments numbers 1, 12 to 14, and 16 to 19 are in the United States; numbers 2 to 11, and 20 are on the continent of Europe; and number 15 is in Great Britain.]

Es- tab- lish- ment num- ber.	Pounds of materials to one ton of product.				Cost of materials per ton of 2,240 pounds.			
	Muck bar.	Pig iron.	Scrap.	Other.	Muck bar.	Pig iron.	Scrap.	Other.
1	.....	2,119	267	a 378	.....	\$16.036	\$77.500	a 83.250
2	b 2,494	.....	(b)	.....	b \$17.456	.....	.....	.....
3	b 2,495	.....	(b)	.....	b 19.106	.....	.....	.....
4	b 2,403	.....	(b)	.....	b 19.430	.....	.....	.....
5	(c)	(c)	(c)	(c)	(c)	(c)	.....	(c)
6	1,629	.....	1,542	d 81	16.179	.....	24.205	d 16.960
7	(c)	(c)	(c)	(c)	(c)	(c)	.....	(c)
8	e 2,855	.....	36	d 45	e 16.250	.....	24.205	d 16.960
9	e 2,411	.....	561	d 40	e 17.008	.....	24.205	d 16.960
10	(c)	(c)	(c)	(c)	(c)	.....	.....	.....
11	(c)	(c)	(c)	(c)	(c)	.....	.....	.....
12	.....	2,509	.....	(f)	.....	24.205	.....	.....
13	.....	2,822	.....	a 538	.....	24.205	.....	a 5.823
14	.....	2,800	.....	a 500	.....	24.205	.....	a 5.000
15	2,646	.....	103	d 41	16.179	.....	24.205	d 16.960
16	.....	2,205	619	(f)	.....	24.205	24.205	.....
17	.....	2,801	381	(f)	.....	24.205	24.205	.....
18	.....	2,800	380	a 036	.....	24.205	24.205	a 5.380
19	2,437	.....	.....	.....	24.205	.....	.....	.....
20	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)

a Iron ore.
b The quantity and cost of scrap are inseparably combined with the quantity and cost of muck bar.
c Not reported.
d Old rails.
e Muck bar and roughed-down bar.
f Iron ore is used, but neither the quantity nor the cost per ton is reported.

TABLE IV.—COST OF PRODUCTION OF MISCELLANEOUS IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

D.—GENERAL STATEMENT OF COST FOR THE PERIOD.

[Establishments numbers 1, 12 to 14, and 16 to 19 are in the United States; numbers 2 to 11, and 20 are on the continent of Europe; and number 15 is in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Materials.			Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
	Gross.	Value of cinder, scrap, etc.	Net.						
1	\$342,387	\$29,375	\$302,062	a \$221,063	\$16,800	\$32,314	\$21,648	\$9,543	\$599,417
2	26,802	804	27,606	1,727	b 501	584	1,148	(b)	31,648
3	31,792	839	30,957	1,798	b 511	371	832	(b)	34,474
4	37,481	1,481	36,000	2,120	b 671	559	967	(b)	40,347
5	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
6	212,268	28,816	184,247	10,227	1,016	10,061	4,879	489	212,546
7	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
8	600,425	51,163	549,260	34,089	2,282	25,186	27,477	1,094	639,849
9	298,256	27,486	271,770	18,117	1,355	13,012	12,268	820	316,823
10	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
11	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
12	4,143	46	4,096	a 2,183	284	622	465	45	7,589
13	1,676	68	1,602	a 674	50	278	220	29	2,231
14	17,200	(c)	d 17,200	a 2,800	200	4,200	2,800	245	d 33,440
15	274,831	4,720	269,111	46,019	940	19,569	12,200	180	345,099
16	2,067	120	2,187	a 2,322	186	664	465	11	4,816
17	12,451	489	11,978	a 9,262	755	2,460	1,078	62	27,561
18	20,806	814	19,992	a 12,779	1,280	5,794	2,391	71	44,187
19	240,741	18,145	231,596	24,732	6,450	10,872	4,904	97	289,652
20	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)

a The high cost for labor is due to using pig iron and ore.

b The expenditures for taxes are inseparably combined with those for officials and clerks.

c Not reported.

d Includes value of cinder, scrap, etc., produced during the period.

TABLE IV.—COST OF PRODUCTION OF MISCELLANEOUS IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

E.—ELEMENTS OF COST IN ONE TON OF 2,340 POUNDS.

[Establishments numbers 1, 12 to 14 and 16 to 19 are in the United States; numbers 2 to 11, and 20 are on the continent of Europe; and number 15 is in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Estab- lish- ment num- ber.	Materials.						Labor.	Off- cials and cl'ks.	Fuel.	Sup- plies and re- pairs.	Taxes.	Total.	
	Gross.					Value of cinder, scrap, etc.							Net.
	Muck bar.	Pig iron.	Scrap.	Other.	Total.								
1.....		\$15.168	\$2.086	a 90.887	\$18.141	\$2.086	\$16.055	b 11.714	\$0.795	\$1.707	\$1.147	\$0.293	\$31.711
2.....	\$19.712		.265		19.877	.555	19.322	1.192	c. 408	.265	.792	(c)	21.979
3.....	21.022		.258		21.280	.552	20.728	1.200	c. 342	.248	.557	(c)	23.075
4.....	20.538		.308		20.846	.807	20.039	1.170	c. 373	.311	.538	(c)	21.440
5.....	(d)	(d)	(d)	(d)	(d)	(d)	21.432	1.628	(d)	.863	.994	(d)	e 24.921
6.....	11.769		7.087	f. 616	19.472	2.570	16.902	.939	.093	.923	.604	.037	19.498
7.....	(d)	(d)	(d)	(d)	(d)	(d)	15.099	2.781	g. 675	.686	.906	(g)	h 20.242
8.....	121.602		.164	f. 343	22.109	1.834	20.275	1.277	.084	.926	1.012	.037	23.561
9.....	118.403		2.578	f. 303	21.284	1.955	19.329	1.280	.096	.926	.868	.037	22.545
10.....	(d)	(d)	(d)	(d)	(d)	(d)	30.082	1.863	g. 863	1.235	.957	(g)	h 35.900
11.....	(d)	(d)	(d)	(d)	(d)	(d)	28.335	1.863	g. 863	1.235	.823	(g)	h 33.119
12.....		16.800		a 1.613	18.413	.200	18.213	b 9.088	1.016	2.778	1.800	.200	23.729
13.....		20.000		a 1.400	21.400	1.360	20.040	b 12.480	1.000	5.500	4.000	.400	44.420
14.....		20.000		a 1.500	21.500	(d)	h 21.500	b 11.000	.250	5.250	2.500	.300	h 41.800
15.....	19.088		.518	f. 269	19.875	.631	19.244	3.328	.004	1.417	.847	.013	24.957
16.....		21.925	5.058	a 1.701	28.684	1.121	27.563	b 21.794	1.731	7.981	4.533	.103	63.612
17.....		21.924	5.032	a 1.697	28.653	1.122	27.531	b 21.522	1.780	7.931	4.512	.097	63.359
18.....		21.925	5.033	a 1.700	28.658	1.121	27.537	b 18.979	1.736	7.961	4.532	.098	60.864
19.....	30.497				30.497	2.216	28.281	4.241	.606	1.328	.843	.012	35.371
20.....	(d)	(d)	(d)	(d)	(d)	(d)	16.511	1.353	(d)	.775	.982	(d)	e 19.621

a Iron ore.

b The high cost for labor is due to using pig iron and ore.

c The expenditures for taxes are inseparably combined with those for officials and clerks.

d Not reported.

e Not including officials and clerks and taxes.

f Old rails.

g The expenditures for taxes and insurance are inseparably combined with those for officials and clerks.

h Including insurance.

i Muck bar and roughed-down bar.

j Includes value of cinder, scrap, etc., produced during the period per ton of product.

TABLE IV.—COST OF PRODUCTION OF MISCELLANEOUS IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.**F.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUNDS.**

[Establishments numbers 1, 12 to 14, and 16 to 19 are in the United States; numbers 2 to 11, and 20 are on the continent of Europe; and number 15 is in Great Britain. This table is based on the preceding one, and to avoid duplicating the notes, which would be the same in substance, they are here omitted and the reader is referred to that table for such information as they furnish.]

Estab- lishment number.	Materials (net).	Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
1	56.63	36.94	2.51	5.38	2.62	.92	100
2	87.91	5.42	1.86	1.21	2.60	.....	100
3	89.83	5.20	1.48	1.08	2.41	.....	100
4	89.30	5.25	1.66	1.39	2.40	.....	100
5	86.00	6.53	.....	2.46	4.01	.....	100
6	86.68	4.82	.48	4.73	3.10	.19	100
7	74.59	18.75	3.34	2.39	4.93	.....	100
8	85.84	5.42	.36	2.93	4.29	.16	100
9	85.73	5.72	.43	4.11	3.85	.16	100
10	86.30	5.19	2.40	3.44	2.67	.....	100
11	85.55	5.63	2.61	2.73	2.48	.....	100
12	54.00	28.75	3.08	8.24	5.34	.59	100
13	45.11	30.35	2.25	12.38	9.01	.90	100
14	51.43	26.32	.60	12.56	8.37	.72	100
15	77.11	13.34	.27	5.69	3.55	.05	100
16	43.24	34.22	2.73	12.53	7.12	.16	100
17	43.45	33.97	2.74	12.52	7.17	.15	100
18	45.25	31.18	2.85	12.11	7.45	.16	100
19	79.96	11.99	1.88	2.76	2.28	.03	100
20	84.16	6.90	.....	2.95	5.00	.....	100

H. Ex. 265—10

TABLE IV.—COST OF PRODUCTION OF MISCELLANEOUS IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.**G.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS.**

[Establishments numbers 1, 12 to 14, and 16 to 19 are in the United States; numbers 2 to 11, and 20 are on the continent of Europe; and number 15 is in Great Britain.]

Establishment number.	Additional cost.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1.....	\$2,088	(a)	(a)	b \$2,088
2.....	(a)	(a)	(a)	(a)
3.....	(a)	(a)	(a)	(a)
4.....	(a)	(a)	(a)	(a)
5.....	(a)	(a)	(a)	(a)
6.....	27	\$1,063	.....	1,090
7.....	(a)	(a)	(a)	(a)
8.....	68	2,648	.....	2,716
9.....	35	1,371	.....	1,406
10.....	(a)	(a)	(a)	(a)
11.....	(a)	(a)	(a)	(a)
12.....	41	108	.....	149
13.....	10	(a)	.....	c 10
14.....	200	552	.....	752
15.....	28	(a)	(a)	b 28
16.....	13	60	.....	93
17.....	51	324	.....	375
18.....	86	545	.....	631
19.....	150	(a)	(a)	b 150
20.....	.....	(a)	(a)	(a)

a Not reported.

b Not including interest and depreciation of value of plant.

c Not including interest.

TABLE IV.—COST OF PRODUCTION OF MISCELLANEOUS IRON AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Concluded.

H.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1, 12 to 14, and 16 to 19 are in the United States; numbers 2 to 11, and 20 are on the continent of Europe; and number 15 is in Great Britain.]

Establishment number.	Additional cost per ton.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1.....	\$0.111	(a)	(a)	b \$0.111
2.....	(a)	(a)	(a)	(a)
3.....	(a)	(a)	(a)	(a)
4.....	(a)	(a)	(a)	(a)
5.....	(a)	(a)	(a)	(a)
6.....	.002	\$0.098	.....	.100
7.....	(a)	(a)	(a)	(a)
8.....	.003	.098	.....	.101
9.....	.002	.098	.....	.100
10.....	(a)	(a)	(a)	(a)
11.....	(a)	(a)	(a)	(a)
12.....	.182	.480	.....	.662
13.....	.200	(a)	.....	e .200
14.....	.250	.690	.....	.940
15.....	.002	(a)	(a)	b .002
16.....	.121	.748	.....	.869
17.....	.117	.745	.....	.862
18.....	.118	.751	.....	.869
19.....	.018	(a)	(a)	b .018
20.....	.....	(a)	(a)	(a)

a Not reported.
b Not including interest and depreciation of value of plant.
c Not including interest.

STEEL INGOTS.

TABLE V.—COST OF PRODUCTION OF STEEL INGOTS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT.

[Note to this edition of the report on Cost of Production of Iron, Steel, Coal, etc.—After a small number of copies of this report had been printed and distributed containing the figures for establishments 6 and 8 serious errors were found in these figures and, therefore, they have been withdrawn in this edition.]

Establishment number.	Locality.	Period covered.		Ingots produced.				No. of converters.
		Terminal dates.	Days of running time.	Description.		Tons of 2,240 pounds.		
				Process.	Used mainly for—	Total.	Per day.	
1	United St's.	Jan. 1, 1889, to Dec. 31, 1889	126	Bessemer ..	Wire	51,479	432	2
2	....do	Jan. 7, 1889, to July 1, 1889	117	Bessemer ..	Nails	28,343	242	2
3	....do	Jan. 1, 1889, to Dec. 31, 1889	244	Bessemer ..	Ship and boiler plates, bars, and wire.	116,880	479	2
4	....do	Jan. 3, 1889, to Jan. 4, 1890	167	Bessemer ..	Nails	24,617	147	2
5	....do	July 1, 1889, to Dec. 31, 1889	a 150	Open hearth	Ship and boiler plates.	a 4,000	a 27	b 2
7	....do	Jan. 1, 1889, to Jan. 4, 1890	199	Bessemer ..	Nails	68,700	346	2
9	Continent of Europe.	July 1, 1888, to June 30, 1889	140	Bessemer ..	Rails, bars, tires, and springs.	22,614	162	2
10	....do	July 1, 1888, to June 30, 1889	274	Thomas	Rails, railway ties, fish-plates, etc.	37,016	135	2
11	....do	Jan. 13, 1889, to Apr. 6, 1889	65	Siemens-Martin.	Plates	2,533	39	b 1
12	....do	Jan. 13, 1889, to Apr. 6, 1889	70	Bessemer (c)	Rails	d 19,470	d 278	2
13	....do	Jan. 13, 1889, to Apr. 6, 1889	70	Bessemer ..	Springs, bars, shafting, and machinery.	e 4,206	e 60	2
14	....do	Nov. 1, 1889, to Nov. 30, 1889	a 25	Thomas	Rails	a 3,788	a 152	2
15	....do	Apr. 1, 1889, to Mar. 31, 1890	(f)	Thomas	Rails, plates, etc.	(f)	(f)	(f)
16	....do	Jan. 1, 1888, to Dec. 31, 1888	(f)	Thomas	Rails, plates, etc.	54,978	(f)	3
17	Great Brit.	Jan. 1, 1889, to June 30, 1889	139	Bessemer ..	Railway sleepers.	26,569	191	2
18	....do	Jan. 1, 1889, to June 30, 1889	136	Siemens-Martin.	Ship plates..	19,944	147	b 6
19	....do	Jan. 1, 1889, to June 30, 1889	(f)	Bessemer ..	Rails	50,611	(f)	(f)
20	....do	Mar. 29, 1888, to Sept. 29, 1888	134	Bessemer ..	Rails	68,451	511	6
21	....do	July 28, 1889, to Aug. 3, 1889	6	Siemens-Martin.	Ship plates .	2,435	406	b 16

a Only one turn per day is worked in this establishment.

b Furnaces.

c Direct process.

d The establishment also produced during the period 4,206 tons by the indirect process.

e The establishment also produced during the period 19,470 tons by the direct process.

f Not reported.

TABLE V.—COST OF PRODUCTION OF STEEL INGOTS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

B.—QUANTITY AND COST OF MATERIALS USED.

[Establishments numbers 1 to 8 are in the United States; numbers 9 to 16 are on the continent of Europe; and numbers 17 to 21 are in Great Britain. Note to this edition of the report on Cost of Production of Iron, Steel, Coal, etc.—After a small number of copies of this report had been printed and distributed containing the figures for establishments 6 and 8 serious errors were found in these figures and, therefore, they have been withdrawn in this edition.]

Establishment number.	Tons of 2,240 pounds.				Cost.				
	Pig iron.	Scrap.	Ferromanganese.	Other.	Pig iron.	Scrap.	Ferromanganese.	Other.	Total.
1.....	55,916	5,381	429	a 1,137	\$953,776	\$64,634	\$34,462	a \$31,375	\$1,076,247
2.....	30,177	847	256	.....	491,335	10,626	13,280	.....	515,241
3.....	114,844	21,015	3,621	.....	1,846,175	344,686	146,321	.....	2,340,184
4.....	28,585	1,256	229	.....	434,606	21,352	15,148	.....	471,105
5.....	750	3,975	40	.....	11,200	61,800	2,600	b 12,500	88,850
7.....	73,468	.....	703	.....	1,249,206	.....	43,148	.....	1,292,442
9.....	c 25,509	.....	.....	(c)	c 333,480	.....	.....	(c)	333,480
10.....	c 44,493	.....	.....	(c)	c 439,307	.....	.....	(c)	439,307
11.....	d 2,719	(d)	(d)	(d)	d 33,164	(d)	(d)	(d)	33,164
12.....	d 22,913	(d)	(d)	(d)	d 272,467	(d)	(d)	(d)	272,467
13.....	d 4,728	(d)	(d)	(d)	d 56,525	(d)	(d)	(d)	56,525
14.....	e 271	14	23	a 129	44,873	211	1,083	a 4,320	50,380
15.....	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
16.....	f 63,314	(f)	.....	(f)	f 745,447	.....	.....	(f)	745,447
17.....	28,915	1,670	196	a 153	336,335	18,289	9,362	a 2,883	366,966
18.....	14,336	7,301	193	g 3,312	105,603	84,799	8,275	g 13,355	271,436
19.....	49,074	3,733	160	a 4,481	576,425	41,854	8,279	a 81,273	707,834
20.....	71,248	4,733	.....	a 4,689	723,473	38,647	.....	a 92,153	854,273
21.....	2,098	377	26	g 650	h 27,561	h 4,800	h 1,170	g, h 2,968	h 36,496

a Spiegeleisen.

b Extra puddled muck bar iron.

c The quantity and cost of other material (spiegeleisen) are inseparably combined with the quantity and cost of pig iron.

d The quantities and costs of all other materials are inseparably combined with the quantity and cost of pig iron.

e Not reported.

f The quantities and costs of scrap and other material (spiegeleisen) are inseparably combined with the quantity and cost of pig iron.

g Iron ore.

h Net cost; the value of the cinder, scrap, etc., has been deducted.

TABLE V.—COST OF PRODUCTION OF STEEL INGOTS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

C.—PROPORTIONS OF MATERIALS USED.

[Establishments numbers 1 to 8 are in the United States; numbers 9 to 16 are on the continent of Europe; and numbers 17 to 21 are in Great Britain. Note to this edition of the report on Cost of Production of Iron, Steel, Coal, etc.—After a small number of copies of this report had been printed and distributed containing the figures for establishments 8 and 9 serious errors were found in these figures and, therefore, they have been withdrawn in this edition.]

Establishment number.	Pounds of materials to one ton of product.				Cost of materials per ton of 2,240 pounds.			
	Pig iron.	Scrap.	Ferromanganese.	Other.	Pig iron.	Scrap.	Ferromanganese.	Other.
1.....	2,200	221	18	a 48	\$16.735	\$15.728	\$57.021	a \$27.118
2.....	2,365	51	20	.....	18.223	16.423	51.875	.....
3.....	2,203	422	73	.....	16.062	15.057	39.679	.....
4.....	2,126	114	21	.....	17.009	17.000	66.148	.....
5.....	2,420	1,722	22	b 352	15.000	20.000	65.000	b 30.000
6.....	a 363	.....	23	.....	17.000	.....	50.400	.....
7.....	c 2,627	.....	.....	(e)	c 13.073	.....	.....	(e)
8.....	c 2,001	.....	.....	(e)	c 10.907	.....	.....	(e)
9.....	d 2,404	(d)	(d)	(d)	d 12.197	(d)	(d)	(d)
10.....	d 2,025	(d)	(d)	(d)	d 11.944	(d)	(d)	(d)
11.....	d 2,514	(d)	(d)	(d)	d 11.955	(d)	(d)	(d)
12.....	e 1,526	0	14	a 114	10.506	15.071	47.174	a 21.865
13.....	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
14.....	f 2,061	(f)	.....	(f)	f 11.413	(f)	.....	(f)
15.....	2,436	141	18	a 13	11.632	10.950	50.333	a 19.497
16.....	1,633	826	23	g 372	11.553	11.614	42.870	g 4.032
17.....	2,212	165	7	a 108	11.534	11.213	51.744	a 18.137
18.....	2,321	153	.....	a 153	10.154	8.167	.....	a 19.737
19.....	1,990	347	26	g 306	h 12.127	h 12.733	h 45.000	g, h 4.562

a Spiegeleisen.

b Extra puddled muck bar iron.

c The quantity and cost of other material (spiegeleisen) are inseparably combined with the quantity and cost of pig iron.

d The quantities and costs of all other materials are inseparably combined with the quantity and cost of pig iron.

e Not reported.

f The quantities and costs of scrap and other material (spiegeleisen) are inseparably combined with the quantity and cost of pig iron.

g Iron ore.

h Net cost; the value of the clinker, scrap, etc., has been deducted.

TABLE V.—COST OF PRODUCTION OF STEEL INGOTS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

D.—GENERAL STATEMENT OF COST FOR THE PERIOD.

[Establishments numbers 1 to 8 are in the United States; numbers 9 to 16 are on the continent of Europe; and numbers 17 to 21 are in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included. Note to this edition of the report on Cost of Production of Iron, Steel, Coal, etc.—After a small number of copies of this report had been printed and distributed containing the figures for establishments 6 and 8 serious errors were found in these figures and, therefore, they have been withdrawn in this edition.]

Establishment number.	Materials.			Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
	Gross.	Value of cinder, scrap, etc.	Net.						
1	\$1,076,247	\$526,811	\$1,075,721	\$98,891	\$13,000	\$43,252	\$45,278	\$5,000	\$1,244,132
2	515,241	2,483	512,758	54,500	3,287	10,840	29,760	241	611,494
3	2,340,184	59,656	2,280,528	177,878	12,400	107,408	52,900	1,200	2,632,613
4	471,195	783	470,222	41,639	2,850	11,321	37,058	400	563,583
5	88,850	0,800	82,050	12,000	1,000	7,000	0,800	100	100,550
6	1,292,442	1,225	1,291,217	118,042	3,505	30,857	42,777	413	1,482,391
7	333,680	2,217	331,283	17,613	1,563	12,018	24,559	219	385,165
8	489,307	2,178	487,129	38,019	3,958	23,663	75,994	555	629,071
9	23,101	283	32,678	2,473	272	2,847	3,960	87	42,469
10	272,487	3,934	268,553	8,548	1,830	12,998	14,231	193	306,355
11	56,525	(a)	656,525	3,583	530	4,038	5,828	42	670,611
12	50,369	233	50,166	3,834	1,070	3,234	4,088	(a)	62,390
13	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
14	745,447	43,268	702,179	57,012	24,683	30,183	77,519	(d)	891,578
15	269,966	5,478	264,488	17,240	4,915	4,337	14,368	520	404,870
16	271,453	7,440	264,013	31,683	1,358	17,552	21,600	130	316,294
17	707,634	11,431	696,403	36,933	2,463	47,231	32,974	634	815,798
18	854,273	7,274	840,999	35,469	3,291	21,851	51,637	828	902,685
19	(a)	(a)	86,408	4,147	185	2,332	1,185	(a)	44,353

a Not reported.

b Includes the value of cinder, scrap, etc., produced during the period.

c Not including taxes.

d The expenditures for taxes are inseparably combined with those for officials and clerks.

e The expenditures for taxes are inseparably combined with those for supplies and repairs.

TABLE V.—COST OF PRODUCTION OF STEEL INGOTS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

E.—ELEMENTS OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 8 are in the United States; numbers 9 to 16 are on the continent of Europe; and numbers 17 to 21 are in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included. Note to this edition of the report on Cost of Production of Iron, Steel, Coal, etc.—After a small number of copies of this report had been printed and distributed containing the figures for establishments 6 and 8 serious errors were found in these figures and, therefore, they have been withdrawn in this edition.]

Estab- lish- ment num- ber.	Materials.						Net.	Labor	Off- cials and cl'ks.	Fuel	Sup- plies and re- pairs.	Taxes	Total.
	Gross.					Value of cinder, scrap, etc.							
	Pig iron.	Scrap.	Ferro- mang- anese.	Other.	Total.								
1.....	\$12.177	\$1.653	\$0.445	\$0.578	\$19.753	\$2.000	\$19.748	\$1.833	\$0.275	\$0.704	\$0.821	\$0.092	\$23.971
2.....	17.335	.375	.460	.....	18.170	.060	18.091	1.023	.110	.383	1.050	.012	21.575
3.....	15.785	2.940	1.278	.....	20.022	.510	19.512	1.532	.108	.919	.452	.010	22.524
4.....	17.655	.867	.615	.....	19.137	.032	19.105	1.002	.116	.460	1.505	.015	22.893
5.....	2.813	15.375	.050	\$ 3.375	22.213	1.700	20.513	3.000	.250	1.900	1.700	.025	27.388
6.....	18.161	.....	.627	.....	18.788	.018	18.770	1.710	.051	.535	.010	.008	21.084
7.....	13.747	.....	(a)	(a)	14.747	.095	14.650	.695	.070	.531	1.088	.011	17.033
9.....	13.219	.....	(c)	(c)	13.219	.050	13.169	1.027	.099	.639	2.033	.018	16.993
11.....	13.093	(d)	(d)	(d)	13.093	.113	12.980	.976	.108	1.124	1.563	.015	16.769
12.....	13.995	(d)	(d)	(d)	13.995	.202	13.793	.438	.094	.688	.731	.010	16.725
13.....	13.439	(d)	(d)	(d)	13.439	(a)	13.439	.853	.128	.980	1.400	.010	16.729
14.....	11.345	.058	.286	\$1.114	13.302	.030	13.273	1.012	.262	.834	1.079	(e)	18.470
15.....	13.719	(d)	(d)	(d)	13.719	1.019	12.670	1.013	.812	.862	1.820	(h)	16.477
16.....	13.538	(i)	(i)	(i)	13.538	.787	12.751	1.037	.448	.549	1.410	(k)	16.217
17.....	12.650	.656	.333	\$ 1.122	13.813	.200	13.608	.818	.185	.238	.941	.019	15.238
18.....	8.275	\$ 2.51	.415	\$ 1.670	13.811	.373	13.438	1.550	.068	.880	1.083	.000	16.867
19.....	11.389	.877	.164	\$ 1.606	13.036	.226	12.789	.713	.049	.923	.661	.013	16.110
20.....	10.509	.945	.....	\$ 1.345	12.450	.106	12.344	.302	.048	.318	.754	.000	13.063
21.....	\$11.219	\$ 1.971	\$.680	\$1.216	\$14.985	(j)	14.985	1.703	.080	.958	m. 447	(m)	18.216

a Spiegeleisen.

b Extra puddled muck bar iron.

c The expenditures for other material (spiegeleisen) are inseparably combined with those for pig iron.

d The expenditures for all other materials are inseparably combined with those for pig iron.

e Not reported.

f Includes the value of cinder, scrap, etc., produced per ton of product.

g Not including taxes.

h The expenditures for taxes are inseparably combined with those for officials and clerks.

i The expenditures for scrap and other material (spiegeleisen) are inseparably combined with those for pig iron.

j Iron ore.

k Net cost.

l The value of the cinder, scrap, etc., produced has already been deducted.

m The expenditures for taxes are inseparably combined with those for supplies and repairs.

TABLE V.—COST OF PRODUCTION OF STEEL INGOTS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

F.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 8 are in the United States; numbers 9 to 16 are on the continent of Europe; and numbers 17 to 21 are in Great Britain. This table is based on the preceding one, and to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader is referred to that table for such information as they furnish. Note to this edition of the report on Cost of Production of Iron, Steel, Coal, etc.—After a small number of copies of this report had been printed and distributed containing the figures for establishments 6 and 8 serious errors were found in these figures and, therefore, they have been withdrawn in this edition.]

Estab- lishment number.	Materials (net).	Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
1	83.77	7.78	1.17	3.37	8.52	.39	100
2	83.85	8.91	.54	1.77	4.87	.06	100
3	86.63	6.76	.48	4.08	2.01	.04	100
4	83.45	7.39	.51	2.01	6.57	.07	100
5	74.90	10.95	.91	6.94	6.21	.09	100
7	86.52	7.91	.23	2.47	2.84	.03	100
9	86.00	4.03	.41	3.12	6.38	.06	100
10	77.44	6.05	.58	3.76	12.08	.09	100
11	77.42	5.82	.65	6.70	9.32	.09	100
12	87.66	2.79	.60	4.24	4.65	.06	100
13	80.03	5.08	.75	5.72	8.34	.06	100
14	80.41	6.14	1.71	5.19	6.55	.....	100
15	76.90	6.15	3.71	4.02	9.22	.....	100
16	78.76	6.39	2.77	3.39	8.69	.....	100
17	89.29	4.26	1.21	1.56	3.55	.13	100
18	78.49	9.42	.40	5.22	6.42	.05	100
19	85.37	4.42	.30	5.79	4.04	.08	100
20	87.99	4.00	.34	2.27	5.36	.04	100
21	82.28	9.35	.44	5.26	2.67	.....	100

TABLE V.—COST OF PRODUCTION OF STEEL INGOTS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

G.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS.

[Establishments numbers 1 to 8 are in the United States; numbers 9 to 16 are on the continent of Europe; and numbers 17 to 21 are in Great Britain. Note to this edition of the report on Cost of Production of Iron, Steel, Coal, etc.—After a small number of copies of this report had been printed and distributed containing the figures for establishments 6 and 8 serious errors were found in these figures and, therefore, they have been withdrawn in this edition.]

Establishment number.	Additional cost.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1	\$600	\$19,000	.....	\$19,600
2 .....	.....	.....	.....	.....
3	700	.....	\$12,500	13,200
4 .....	.....	.....	.....	.....
5	30	.....	.....	30
7 .....	.....	3,187	.....	3,187
9	90	.....	.....	90
10	223	.....	.....	223
11	(a)	.....	.....	(a)
12	(a)	.....	.....	(a)
13	(a)	.....	.....	(a)
14	(a)	.....	.....	(a)
15	(a)	.....	.....	(a)
16	(a)	.....	.....	(a)
17 .....	.....	.....	.....	.....
18	28	.....	.....	28
19 .....	.....	b 12,453	(b)	c 12,453
20 .....	.....	.....	.....	.....
21 .....	.....	.....	.....	.....

a Not reported.
b Depreciation of value of plant and expenses of London agency are inseparably combined with interest.
c Including expenses of London agency.

TABLE V.—COST OF PRODUCTION OF STEEL INGOTS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Concluded.

II.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 8 are in the United States; numbers 9 to 16 are on the continent of Europe; and numbers 17 to 21 are in Great Britain. Note to this edition of the report on Cost of Production of Iron, Steel, Coal, etc.—After a small number of copies of this report had been printed and distributed containing the figures for establishments 6 and 8 serious errors were found in these figures and, therefore, they have been withdrawn in this edition.]

Establishment number.	Additional cost per ton.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1.....	\$0.011	\$0.349	.....	\$0.360
2.....	.....	.....	.....	.....
3.....	.006	.....	\$0.107	.113
4.....	.....	.....	.....	.....
5.....	.008	.....	.....	.008
7.....	.....	.046	.....	.046
9.....	.004	.....	.....	.004
10.....	.006	.....	.....	.006
11.....	(a)	.....	.....	(a)
12.....	(a)	.....	.....	(a)
13.....	(a)	.....	.....	(a)
14.....	(a)	.....	.....	(a)
15.....	(a)	.....	.....	(a)
16.....	(a)	.....	.....	(a)
17.....	.....	.....	.....	.....
18.....	.001	.....	.....	.001
19.....	.....	b.246	(b)	c.246
20.....	.....	.....	.....	.....
21.....	.....	.....	.....	.....

a Not reported.
b Depreciation of value of plant and expenses of London agency are inseparably combined with interest.
c Including expenses of London agency.

SUMMARY OF COST OF STEEL INGOTS (BESSEMER PROCESS) IN FIVE ESTABLISHMENTS IN THE UNITED STATES.

[This summary is drawn from sub-tables A to H immediately preceding. The establishments covered are numbered 1 to 4, inclusive, and 7, being all the Bessemer steel ingot mills in the United States from which reports have been obtained. As may be seen the periods covered are irregular and are in the years 1889 and 1890. All statements in connection with this summary are revised in this edition to agree with the omissions referred to in the prefatory notes.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 293,109.	Average cost of one.
Materials (net).....	\$5,630,547	\$19.210
Labor.....	492,050	1.679
Officials and clerks.....	87,242	.127
Fuel.....	209,661	.715
Supplies and repairs.....	207,381	.707
Taxes.....	7,314	.025
Total.....	6,584,195	22.463

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Two establishments gave the amount paid for insurance; the aggregate of these makes the sum credited to this item below. Three reported that they had no insurance. Two establishments gave the amount paid for interest; the aggregate of these makes the sum below. Three reported that there was no expenditure for interest. One establishment gave the amount charged to depreciation; which makes the sum below. Four reported that nothing was charged to depreciation. The sums entered in the first column below are, of course, apportioned in the second column among the whole five establishments.]

Insurance.....	\$1.300	\$0.004
Interest.....	22.187	.076
Depreciation of value of plant.....	12,500	.043
Total.....	25.987	.123

PART I.—COST OF PRODUCTION.

SUMMARY OF COST OF STEEL INGOTS (BESSEMER PROCESS) IN THREE ESTABLISHMENTS ON THE CONTINENT OF EUROPE.

[This summary is drawn from the preceding sub-tables A to H. The establishments covered are numbers 9, 12, and 13, being all the Bessemer steel ingot mills on the continent of Europe from which reports were obtained. As may be seen the periods covered are irregular and are in the years 1888 and 1889.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 46,200.	Average cost of one.
Materials (net)	\$656,341	\$14.179
Labor	27,649	.597
Officials and clerks	3,943	.083
Fuel	29,054	.624
Supplies and repairs	44,678	.995
Taxes	486	.011
Total	762,151	16.465

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[One establishment gave the amount paid for insurance, which makes the sum credited to this item below. For two the agent of the Department failed to obtain a statement. All three establishments reported that there was no expenditure for interest, and that nothing was charged to depreciation. The sum entered in the first column below is, of course, apportioned in the second column among the whole three establishments.]

Insurance	\$90	\$0.002
Interest .....	.....	.....
Depreciation of value of plant .....	.....	.....
Total	90	.002

SUMMARY OF COST OF STEEL INGOTS (BESSEMER PROCESS) IN THREE ESTABLISHMENTS IN GREAT BRITAIN.

[This summary is drawn from the preceding sub-tables A to H. The establishments covered are numbers 17, 19, and 20, being all the Bessemer steel ingot mills in Great Britain from which reports were obtained. As may be seen the periods covered are of six months' duration and are in the years 1888 and 1889.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 145,631.	Average cost of one.
Materials (net)	\$1,904,890	\$13.080
Labor	91,802	.630
Officials and clerks	10,869	.073
Fuel	75,410	.518
Supplies and repairs	98,979	.680
Taxes	1,544	.011
Total	2,183,303	14.992

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[All three establishments reported that they had no insurance. One establishment gave the amount paid for interest and the amount charged to depreciation in one sum, which is the sum below. Two reported that there was no expenditure for interest, and that nothing was charged to depreciation. The sum entered in the first column below is, of course, apportioned in the second column among the whole three establishments.]

Insurance .....	.....	.....
Interest	\$12,453	\$0.086
Depreciation of value of plant	(a)	(a)
Total	12,453	.086

a The cost of depreciation is inseparably combined with the cost of interest.

STEEL RAILS.

H. Ex. 265—11

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STEEL RAILS.

The titles of Table VI and its sub-tables are as follows:

TABLE VI.—*Cost of Production of Steel Rails at Various Establishments in Various States.*

- A.—Period covered and quantity of product.
- B.—Quantity and cost of materials used.
- C.—Proportions of materials used.
- D.—General statement of cost for the period.
- E.—Elements of cost in one ton of 2,240 pounds.
- F.—Per cent. of each element of cost in one ton of 2,240 pounds.
- G.—Additional cost of certain theoretical elements.
- H.—Additional cost of certain theoretical elements in one ton of 2,240 pounds.

Table VI covers fewer establishments than is desirable. Every effort, however, has been made to secure information from a large number of establishments, the desire being to cover so many that the results would be accepted as thoroughly representative. As explained in the introduction, however, the Department did not succeed in securing such full and complete information. The steel rail manufacturers, not only of this country, but of Europe, are exceedingly sensitive on the matter of giving information relative to their great industry. It is a curious fact that while the producers of pig iron are not affected by this sensitiveness, it should so thoroughly prevail among steel rail manufacturers. Notwithstanding this feeling, thirteen establishments have been willing to furnish the Department with quite complete information. Of this number, two are in the United States, eight on the continent of Europe, and three in Great Britain. In addition to the proprietors of these thirteen establishments, the managers of several others have furnished us either with most important analytical information or positive statements as to the cost of making steel rails. We feel, therefore, that while this report lacks the returns from some of the very largest works in the United States and Great Britain, sufficient information has been secured to establish the approximate cost of the production of rails in these two countries. It is but due to the managers of great concerns in this country and abroad who have declined to furnish information, to say that the declination has always been made most courteously, and reasons sufficient to their minds have been given for the refusal. While believing that no possible harm, but on the contrary great good, would come from the disclosure of all the facts relating to the cost of production of steel rails, the writer nevertheless appreciates the position of the manufacturer who declines to furnish the information.

The days of running time reported are full days of two turns each.

The supplementary tables concerning the reported cost of insurance, interest, and depreciation (sub-tables G and H) are very incomplete.

TABLE VI.—COST OF PRODUCTION OF STEEL RAILS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT.

Establishment number.	Locality.	Period covered.		Description (pounds per yard).	Rails produced.	
		Terminal dates.	Days of running time.		Total.	Per day.
1	United States.....	July 15, 1889, to July 27, 1889.	■	(a)	4,398	308
2	do	Jan. 1, 1889, to Dec. 31, 1889	258	63.7	112,460	440
3	Continent of Europe ..	Jan. 13, 1889, to Apr. 6, 1889	70	(b)	14,916	213
4	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	71.0	(a)	(a)
5	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	19.1	(a)	(a)
6	do	Apr. 1, 1889, to Mar. 31, 1890	(a)	67.3	(a)	(a)
7	do	Apr. 1, 1889, to Mar. 31, 1890.	(a)	67.3	(a)	(a)
8	do	Apr. 1, 1889, to Mar. 31, 1890.	(a)	(c)	(a)	(a)
9	do	July 1, 1888, to June 30, 1889	132	51.8	16,976	129
10	do	July 1, 1888, to June 30, 1889	37	19.1	961	26
11	Great Britain.....	Apr. 1, 1888, to Sept. 23, 1888	94	(c)	8,294	88
12	do	Apr. 1, 1888, to Sept. 23, 1888	137	(a)	32,926	240
13	do	Jan. 1, 1889, to June 30, 1889	(a)	(a)	36,167	(a)

a Not reported.

b From 50 to 166 pounds; average, about 73 pounds.

c Various.

TABLE VI.—COST OF PRODUCTION OF STEEL RAILS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

B.—QUANTITY AND COST OF MATERIALS USED.

[Establishments numbers 1 and 2 are in the United States; numbers 3 to 10 are on the continent of Europe; and numbers 11 to 13 are in Great Britain.]

Establishment number.	Tons of 2,240 pounds.			Cost.			Total.
	Ingots.	Blooms.	Billets.	Ingots.	Blooms.	Billets.	
1	4,398			a 497,360			a 497,360
2		129,562			82,945,720		2,945,720
3		17,176			284,369		284,369
4	(b)	(b)	(b)	(b)	(b)	(b)	(b)
5	(b)	(b)	(b)	(b)	(b)	(b)	(b)
6	(b)	(b)	(b)	(b)	(b)	(b)	(b)
7	(b)	(b)	(b)	(b)	(b)	(b)	(b)
8	(b)	(b)	(b)	(b)	(b)	(b)	(b)
9	19,712			338,732			838,732
10	1,086			19,806			19,806
11		8,925	2,944		113,618	653,919	167,337
12		39,667			620,863		620,863
13	66,385			746,769			746,769

a Estimated.

b Not reported.

TABLE VI.—COST OF PRODUCTION OF STEEL RAILS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

C.—PROPORTIONS OF MATERIALS USED.

[Establishments numbers 1 and 2 are in the United States; numbers 3 to 10 are on the continent of Europe; and numbers 11 to 13 are in Great Britain.]

Establishment number	Pounds of materials to one ton of product.			Cost of materials per ton of 2,240 pounds.		
	Ingot.	Bloom.	Billet.	Ingot.	Bloom.	Billet.
1.....	2,488			\$24.000		
2.....		2,384			\$24.282	
3.....		2,580			16.557	
4.....	(b)	(b)	(b)	(b)	(b)	(b)
5.....	(b)	(b)	(b)	(b)	(b)	(b)
6.....	(b)	(b)	(b)	(b)	(b)	(b)
7.....	(b)	(b)	(b)	(b)	(b)	(b)
8.....	(b)	(b)	(b)	(b)	(b)	(b)
9.....	2,603			17.178		
10.....	2,563			18.396		
11.....		1,879	705		16.407	\$18.318
12.....		2,700			15.614	
13.....	2,722			18.700		

a Estimated.

b Not reported.

TABLE VI.—COST OF PRODUCTION OF STEEL RAILS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

D.—GENERAL STATEMENT OF COST FOR THE PERIOD.

[Establishments numbers 1 and 2 are in the United States; numbers 3 to 10 are on the continent of Europe; and numbers 11 to 13 are in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Materials.			Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
	Gross.	Value of cinder, scrap, etc.	Net.						
1	\$97,380	\$4,800	\$92,580	\$6,748	(b)	\$4,820	\$4,382	\$219	\$108,609
2	2,045,720	96,304	1,949,416	158,826	(b)	47,318	87,788	(b)	2,141,326
3	284,389	26,850	263,539	13,581	(c)	8,013	8,074	180	291,937
4	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
5	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
6	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
7	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
8	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
9	338,782	19,567	319,215	17,445	\$1,783	5,524	38,604	372	380,792
10	19,006	1,000	18,006	2,054	207	323	3,681	82	23,402
11	167,337	17,768	149,569	21,738	405	4,740	5,897	48	181,897
12	826,863	81,011	745,852	45,054	839	14,788	11,457	98	812,037
13	748,789	91,081	657,708	60,474	1,035	30,123	28,088	861	779,147

a The cost of labor is derived from the payrolls and is exact; the costs for all other purposes are careful estimates, but without doubt are substantially correct.

b Not reported.

c Not including officials and clerks.

d Not including officials and clerks and taxes.

e The expenditures for officials and clerks are inseparably combined with those for supplies and repairs.

UNITED STATES DEPARTMENT OF LABOR.

STEEL RAILS AT VARIOUS
STATES—Continued.

~~WEIGHT~~ 1ST IN LINE TON OF 0.240 POUNDS.

... numbered 1 to 10 are on the continent of
... interest, depreciation of value of
... are not included.)

[illegible]

... or for any other purposes are

... you with those for supplies and

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

...with those for officials and

• FEEL RAILS AT VARIOUS

WEIGHED 2.240 POUNDS.

... to be on the continent of
... the preceding one, and to
... are omitted, and the

	Taxes.	Total.
	.29	100
	.....	100
	.05	100
	.....	100
	.....	100
	.....	100
	.....	100
	.....	100
	.07	100
	.03	100
	.01	100
	.02	100
Total	.08	100

TABLE VI.—COST OF PRODUCTION OF STEEL RAILS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

G.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS.

[Establishments numbers 1 and 2 are in the United States; numbers 3 to 10 are on the continent of Europe; and numbers 11 to 13 are in Great Britain.]

Establishment number.	Additional cost.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1.....	\$75	(a)	(a)	b \$75
2.....	(a)	(a)	(a)	(a)
3.....	(a)	(a)	(a)	(a)
4.....	(a)	(a)	(a)	(a)
5.....	(a)	(a)	(a)	(a)
6.....	(a)	(a)	(a)	(a)
7.....	(a)	(a)	(a)	(a)
8.....	(a)	(a)	(a)	(a)
9.....	119	.....	.....	119
10.....	13	.....	.....	13
11.....	.....	.....	.....	.....
12.....	.....	.....	.....	.....
13.....	.....	c \$12, 971	(c)	d 12, 971

a Not reported.
b Not including interest and depreciation of value of plant.
c Depreciation of value of plant and expenses of London agency are inseparably combined with interest.
d Including expenses of London agency.

TABLE VI.—COST OF PRODUCTION OF STEEL RAILS AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Concluded.

II.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 and 2 are in the United States; numbers 3 to 10 are on the continent of Europe; and numbers 11 to 13 are in Great Britain.]

Establishment number.	Additional cost per ton.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1.....	\$0.017	(a)	(a)	b \$0.017
2.....	(a)	(a)	(a)	(a)
3.....	(a)	(a)	(a)	(a)
4.....	(a)	(a)	(a)	(a)
5.....	(a)	(a)	(a)	(a)
6.....	(a)	(a)	(a)	(a)
7.....	(a)	(a)	(a)	(a)
8.....	(a)	(a)	(a)	(a)
9.....	.007	.....	.....	.007
10.....	.014	.....	.....	.014
11.....	.....	.....	.....	.....
12.....	.....	.....	.....	.....
13.....	.....	c \$0.310	(c)	d .310

a Not reported.
b Not including interest and depreciation of value of plant.
c Depreciation of value of plant and expenses of London agency are inseparably combined with interest.
d Including expenses of London agency.

THE AVERAGE COST OF STEEL RAILS IN THE UNITED STATES AND IN EUROPE.

It would be most gratifying if from the table relating to the cost of producing steel rails, pages 164 to 167, the average cost of producing standard steel rails in the United States, on the continent of Europe, and in Great Britain, could be so clearly ascertained as to establish figures for exact conclusions. The table embraces thirteen establishments, numbers 1 and 2 being for the United States; the total cost of a ton of rails in establishment number 1 being \$24.799 and in number 2, \$27.687. The Department has been positively informed relative to the cost of making steel rails in several of the very largest establishments in the United States, and there is no shadow of a doubt in the mind of the writer that in these establishments the actual cost of standard steel rails is, and has been for some time, within a few cents of \$22 per ton at the works. The book account of the cost at one of the establishments referred to in these remarks would show the cost to be from \$24.50 to \$24.75 per ton, the difference between the book account cost and the actual cost arising from the fact that in the one case some materials are charged at the market price, while in the other they are reckoned at what they really cost the producer of the steel rails. Those who make steel rails as a subsidiary feature of their business, paying perhaps larger attention to other products, probably cannot manufacture a standard quality of, say, 60 pounds to the yard for less than is stated for establishment number 2, that is, \$27.687, and the cost in such mills will vary from this figure in slight degree as conditions vary. An average to be drawn from the statements for establishments 1 and 2 (an average based on the total product, and not derived by adding the two sums together and dividing by 2) shows for a result \$27.579 as the average cost per ton. Passing to the continent of Europe, the only establishments which could be brought together for making an average are 3 and 9, both making heavy rails. The establishments numbered from 4 to 8, inclusive, located on the continent of Europe, did not give the quantity of product, and hence it is not possible to use them to obtain an average cost based on quantity; but taking 3 and 9, for which quantity of product was given, the average cost per ton is \$21.10, this being for heavy rails, practically the same standard as is produced by number 2 in the United States. Establishment 10, continent of Europe, manufactures light rails, but the output is small, and the cost \$26.711 per ton. Establishments from 3 to 10, inclusive, are all on the continent of Europe, and from 11 to 13, inclusive, in Great Britain. The cost per ton, by sub-table E is shown to be for number 11, \$21.907; for 12, \$18.588, and for 13, \$20.178. While the kind of rails made by these three establishments was not reported, it is probably true that they were standard rails. Making an average for the three, based on the quantity of product, the cost is found to be

\$19.699. The cost of steel rails fluctuates considerably in Great Britain, the variations extending over a wider range, perhaps, than in the United States. The tendency to gamble and speculate in pig iron, to which reference has been made (page 14), is the leading factor in this great fluctuation. Its influence is felt in a serious way in the production of steel rails. During the latter part of 1889 a very celebrated firm, engaged in the production of steel rails and other products, the steel rail, however, being the lesser part of the output, furnished the Department the following figures as to the cost of making a ton of steel rails weighing 60 pounds per yard:

ELEMENTS OF COST IN ONE TON OF STEEL RAILS MADE IN ENGLAND IN 1889.

[The quantity of ingots used to make a ton of rails was 2,762 pounds, and their cost was \$17.667 per ton, the pig iron to make the ingots being charged in at the average market price, \$13.018 per ton. The rails made weigh about 60 pounds per yard.]

Elements of cost.	Cost per ton (2,240 pounds) of product.
Ingots	\$21.783
Value of cinder, scrap, etc., resulting from the manufacture	2.792
Total materials, net	18.991
Labor	1.540
Officials and clerks, etc. ....	.223
Fuel .....	.774
Supplies and repairs .....	.753
Taxes, etc. ....	.175
Total	22.456

This establishment, in October, 1890, found that the same grade of steel rails cost \$24.226. The higher cost is accounted for by the advance in the price of iron and the wages of labor. The statement for October, 1890, is as follows:

ELEMENTS OF COST IN ONE TON OF STEEL RAILS MADE IN ENGLAND IN 1890.

[The quantity of ingots used to make a ton of rails was 2,762 pounds, and their cost was \$19.091 per ton, the pig iron to make them being charged in at the average market price of \$13.991 per ton. The rails made weigh about 60 pounds per yard.]

Elements of cost.	Cost per ton (2,240 pounds) of product.
Ingots	\$23.539
Value of cinder, scrap, etc., resulting from the manufacture	2.920
Total materials, net	20.619
Labor	1.763
Officials and clerks	a .352
Fuel	(b)
Supplies and repairs	b 1.492
Taxes	(a)
Total	24.226

a The expenditures for taxes are inseparably combined with those for officials and clerks.

b The expenditures for fuel are inseparably combined with those for supplies and repairs.

Notwithstanding this high cost in the particular concern just referred to for the latter part of 1889 and 1890, the writer is satisfied that steel rails can be produced in Great Britain, under normal conditions, for a sum not varying much from \$18 per ton, and it is with Great Britain only that any great competition in the supply of steel rails has come, a competition which has now practically ceased, as will be seen by reference to the tables on importations. If this statement be true, and it is believed to be sufficiently accurate for all business purposes or considerations, the lowest cost of producing steel rails in Great Britain is \$18, and the highest ordinary cost in the United States, \$27.70, a difference of \$9.70 in favor of the former. It is possible that under some peculiarly fortunate circumstances rails can be produced in Great Britain for less than \$18 per ton. Throwing out profits on the materials of which rails are made, which are ordinarily charged into the cost by British producers, and this statement as to cost lower than \$18 becomes reasonable, and without doubt approximates the exact truth, so that the difference between the lowest cost of British steel rails of 60 pounds to the yard and the lowest cost of the same grade of rails in the United States is in the vicinity of \$5 per ton.

These general tables on cost of production have been before the public over six months, having been sent to Congress in a preliminary report dated July 1, 1890 (returns from some additional establishments have since been incorporated with them), and so far the only criticism upon them which would seem to claim any attention on the part of this Department is that of Mr. James M. Swank, secretary of the American Iron and Steel Association, in his letter to Senator Nelson W. Aldrich, dated August 1, 1890, in which he refers to the cost of steel rails as given in that preliminary report (and in this) for Great Britain as being above the selling price of rails in that country during some portion of the period covered by our investigation. The criticism would at first seem a fair one to make, but it falls when one considers the fluctuating elements just referred to. In fact, Mr. Swank himself, in an article published in the Bulletin of the American Iron and Steel Association, June 11, 1890, offers very conclusive evidence of the invalidity of his subsequent criticism. He says:

The European markets go up and down as do our own. Steel rails afford a good illustration of the needed protection referred to. In January and February, 1890, English steel rails cost £7 5s., or about \$35 per ton, delivered on board vessels; in June the quotation was £4 10s., or about \$21.90, a fall of over \$13 per ton in 4 months. In August, 1888, English steel rails were quoted at £3 12s. 6d., or \$17.63 per ton, and from May to August, 1886, they were regularly quoted at £3 7s. 6d., or \$16.42. The quotations in 1886 and again in 1888 were doubled in the early part of 1890.

In the letter from the American Iron and Steel Association to Hon. Daniel Manning, in reply to his circular letter dated July 17, 1885, the association makes the following statement, when speaking of the cost of producing iron and steel:

With regard to the cost of producing iron and steel in competing countries, we have not believed it to be necessary to attempt to ascertain the elements of this cost, assuming that for all practical purposes the prices at which these products have recently been sold may be accepted as an approximation to their actual and usual cost.

And further, in speaking of references to foreign cost, the association says:

We shall assume, therefore, the foreign price to-day approximates the usual foreign cost.

These statements by the Iron and Steel Association are perfectly correct when quotations are low, but, as shown above, when British steel rails are quoted at \$35 per ton, the cost and the price bear no true relation to each other, although with the boom in iron and wages in the early part of 1890 not only cost but prices reached high figures, as has been shown. The period covered by the returns given in establishments 11 and 12 for Great Britain is from April 1, 1888, to September 29, 1888, and for establishment 13, from January 1, 1889, to June 30, 1889, and the lowest quoted price for steel rails for those periods was \$18.25 in June, 1888 (see page 179). The lowest cost, as given by our tables, was for establishment number 12, \$18.588, and this was the average cost covering the period just stated. Products are often sold at cost, especially steel rails in Great Britain, when the demand is light and the supply abundant. The same is true of wheat and other articles, as between this country and Great Britain. An examination of the market price of steel rails in Great Britain, in connection with the cost given in our tables, shows the harmony and the integrity of the statements made.

What the results would be of an average cost of steel rails derived from all the establishments in Great Britain we cannot say. We have done our best to reach such an average, not only for Great Britain, but for the United States. An average for Great Britain and the continent of Europe is of no great interest to this country. And for business purposes it would be unjust to use such an average in comparison with one for the United States, for it is manifest that cost of production is too high generally on the continent of Europe to allow of competition with us, and that it is only with Great Britain that competition in steel rails is possible.

DIRECT LABOR, ETC., FROM THE MATERIALS IN THE EARTH TO THE FINISHED PRODUCT.

In treating the cost of production of pig iron in the earlier pages of this report, considerable space was given to the results of an attempt to follow the materials from which iron is made back to the earth from which they are mined, and to determine how much was paid at each step, from the mining to the conversion of the materials in the blast furnace, for direct labor, how much for the salaries of officials and clerks

engaged in the administrative work, how much for supplies, repairs, and taxes, and how much for transportation of the materials to the point where used. The reader will do well to examine what was there presented on this subject for pig iron. The attempt has been made to carry out a similar analysis for steel rails, and the tables exhibiting the results will immediately follow, but the difficulties in the way make the work far less satisfactory than for pig iron. These difficulties lie in the additional processes of ingots, blooms, and rails through which the materials must be traced, and in the fact that it was possible to get any information from only a few rail mills. There is first presented the results obtained by analyzing establishment number 1 of Table VI, situated in the United States. The conditions were such in this case that it was impossible to trace out the actual materials used, and the table is made up from averages. Thus six representative establishments producing ore fit for Bessemer pig were taken, and an average for direct labor and each of the other items figured out. Coal, coke, and limestone were treated in the same way. The average cost for conversion of raw materials into pig was similarly obtained from a half dozen blast furnaces. Thus, step by step, the work was followed up to the necessary quantity of ingots and finally to the finished ton of steel rails. The entire costs when summed up were found to be \$24.666, while the cost as tabulated in sub-table E, is \$24.799, a difference of only 13.3 cents. The table is now given:

COST OF DIRECT LABOR, ETC., IN ONE TON OF STEEL RAILS.

UNITED STATES.

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Timber.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 4,137 pounds of iron ore.	\$2.142	\$0.124	\$0.807	\$0.081	\$4.893	.....	\$2.926	\$10.973
Production of 1,497 pounds of limestone.	.205	.018	.025	.001	.318	.....	.036	.603
Production of 4,808 pounds of bituminous coal.	1.973	.068	.149	.013	.....	\$0.042	.....	2.243
Conversion of above coal into 3,532 pounds of coke	.538	.076	.072	.069	.738	.....	.....	1.493
Production of 233 pounds of cinder. (See below.)	.....	.....	.....	.....	.....	.....	.....	.....
Conversion of above materials into 2,649 pounds of pig iron.	1.576	.134	.718	.054	.....	.....	.....	2.482
Production of 79 pounds of scrap and ferro-manganese. (See below.)	.....	.....	.....	.....	.....	.....	.....	.....
Conversion of above materials into 2,488 pounds of steel ingots.	1.689	.120	.503	.011	.....	.....	.....	2.323
Fuel (2,220 pounds bituminous coal) used in ingot mill.	.912	.032	.069	.006	.....	.019	.....	1.038
Conversion of above ingots into 2,240 pounds of steel rails.	1.540	(a)	1.000	.050	.....	.....	.....	2.500
Fuel (2,340 pounds bituminous coal) used in rail mill.	.962	.033	.073	.007	.....	.020	.....	1.086
Total	11.597	.605	3.416	.232	5.049	.081	2.962	24.843
Cost of above 233 pounds of cinder, only the total of which can be given .....	.....	.....	.....	.....	.....	.....	.....	.094
Cost of above 79 pounds of scrap and ferro-manganese, only the total of which can be given.	.....	.....	.....	.....	.....	.....	.....	.937
Total gross cost of one ton (2,240 pounds) of steel rails .....	.....	.....	.....	.....	.....	.....	.....	25.873
Deduct value of scrap produced in the ingot and rail mills .....	.....	.....	.....	.....	.....	.....	.....	1.207
Total net cost of one ton (2,240 pounds) of steel rails .....	.....	.....	.....	.....	.....	.....	.....	24.666
SUMMARY OF THE ABOVE.								
Total cost of ore, limestone, coal, and coke .....	.....	.....	.....	.....	.....	.....	.....	\$15.314
Cost of direct labor in producing the above materials .....	.....	.....	.....	.....	.....	.....	.....	\$4.918
Per cent. of cost of direct labor in producing the above materials .....	.....	.....	.....	.....	.....	.....	.....	32
Total cost of converting above materials and cinder into pig iron .....	.....	.....	.....	.....	.....	.....	.....	\$2.482
Cost of direct labor in converting above materials and cinder into pig iron .....	.....	.....	.....	.....	.....	.....	.....	\$1.576
Per cent. of cost of direct labor in converting above materials and cinder into pig iron .....	.....	.....	.....	.....	.....	.....	.....	63
Total cost of converting pig iron and scrap and ferro-manganese into steel ingots .....	.....	.....	.....	.....	.....	.....	.....	\$3.361
Cost of direct labor in converting pig iron and scrap and ferro-manganese into steel ingots ..	.....	.....	.....	.....	.....	.....	.....	\$2.601
Per cent. of cost of direct labor in converting pig iron and scrap and ferro-manganese into steel ingots.	.....	.....	.....	.....	.....	.....	.....	77
Total cost of converting steel ingots into 2,240 pounds of steel rails .....	.....	.....	.....	.....	.....	.....	.....	\$3.685
Cost of direct labor in converting steel ingots into 2,240 pounds of steel rails .....	.....	.....	.....	.....	.....	.....	.....	\$2.502
Per cent. of cost of direct labor in converting steel ingots into 2,240 pounds of steel rails .....	.....	.....	.....	.....	.....	.....	.....	68
Total net cost of one ton of steel rails .....	.....	.....	.....	.....	.....	.....	.....	\$24.666
Cost of direct labor in one ton of steel rails .....	.....	.....	.....	.....	.....	.....	.....	\$11.597
Per cent. of cost of direct labor in one ton of steel rails .....	.....	.....	.....	.....	.....	.....	.....	47

(a) Not reported.

In addition to the foregoing analysis drawn from establishment number one of Table VI, a large steel rail mill in the United States has furnished the Department with the following statement showing expenditures for direct labor. This shows a total cost of \$14.215, as against \$11.597 in the table just given. The difference is largely due to the cost of conversion of pig iron into steel rails, the result of local conditions:

COST OF DIRECT LABOR IN ONE TON OF STEEL RAILS.
UNITED STATES.

Materials and successive stages of conversion.	Cost.
Production of 4,353 pounds of iron ore.....	\$2.997
Production of 984 pounds of limestone.....	.198
Production of — pounds of bituminous coal.....	1.524
Conversion of above coal into 3,275 pounds of coke.....	
Conversion of above materials into 2,668 pounds of pig iron.....	2.481
Production of 1,595 pounds of bituminous coal for fuel.....	.876
Conversion of above pig iron into 2,240 pounds of steel rails.....	6.159
Total cost of direct labor in one ton (2,240 pounds) of steel rails.....	14.215

The following calculation is for one ton of steel rails made in Great Britain, and the statement is based on establishment number 12 of the steel rail tabulation, Table VI. In this case we started with the cost of steel rails as given in sub-table E for this establishment, and were able to trace the costs back through the preceding processes of making the blooms, ingots, pig iron, coke, coal, and limestone, the actual materials used being considered at each step except in the case of ore. This was possible, as all these elements were produced under the direction of the company making the rails. For iron ore, however, we did not have the exact mine from which it was taken, but we did have a representative mine in the same district, and we also had the cost of transportation; so that the element of possible error in calculating costs in this case is of necessity exceedingly slight. As to the figures of difference between foregoing actual costs and costs as charged by blast furnace, a part is accounted for by the royalty or rent paid to the owners of the soil, which amounted to 60 cents for the amount of ore shown in the statement. The remainder is the difference between the actual cost of the ore delivered at the furnace, as figured out from the statement furnished by the mines, and the cost as charged in the books of the blast furnace. The table follows:

COST OF DIRECT LABOR, ETC., IN ONE TON OF STEEL RAILS.

GREAT BRITAIN.

[illegible]

The next statement, relating to the analysis of cost of one ton of steel rails produced on the continent of Europe, is based on establishment number 3 of the steel rail tabulation, Table VI. In making this analysis for the continent of Europe we were able to follow the processes back, as in the case of the British establishment just given, until we came to the pig iron, when, owing to the incompleteness of the pig-iron statement for this establishment, we found it necessary to use the statement from another furnace for the cost of converting the materials into pig iron. For the costs of the materials themselves, except limestone and ore, we had data available from the report for number 3. For the limestone we had the total cost as reported at the pig-iron furnace, but had no schedule showing the subdivision of this total into the needed items. The division of this small amount was therefore made in the same ratio as that indicated in the limestone schedules for the northern district of the United States. The ore used was from the same locality as that used in the British establishment just given; so the same statement was made use of. In other respects the same plan was pursued as in the case of the British mill. The following is the table:

COST OF DIRECT LABOR, ETC., IN ONE TON OF STEEL RAILS.

CONTINENT OF EUROPE.

Materials and successive stages of conversion.	Direct labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Transport to point where used.	Timber.	Difference between foregoing actual costs and costs as charged by blast furnace.	Total.
Production of 5,701 pounds of iron ore.	\$0.957	\$0.028	\$0.206	\$0.033	\$3.744	.....	\$3.815	\$8.783
Production of 1,582 pounds of limestone.	.174	.016	.021	.001	.086	.....	.....	.298
Production of 4,927 pounds of bituminous coal.	2.326	.175	.315	.042	.....	\$0.480	.....	3.338
Conversion of above coal into 3,509 pounds of coke.	.590	.051	.047	.024	.064	.....	.....	.776
Conversion of above materials into 3,061 pounds of pig iron.	1.246	.021	a.381	(a)	.....	.....	1.476	3.124
Conversion of above pig iron into 2,612 pounds of steel ingots.	.512	.110	.852	.012	.....	.....	.....	1.486
Fuel (782 pounds of coke) used in ingot mill.	.649	.050	.081	.016	.....	.107	.....	.903
Conversion of above ingots into 2,580 pounds of steel blooms.	.203	.049	.240	.049	.....	.....	.....	.541
Fuel (217 pounds of coke) used in bloom mill.	.180	.014	.022	.005	.....	.030	.....	.251
Conversion of above blooms into 2,240 pounds of steel rails.	1.043	(b)	b.448	.010	.....	.....	.....	1.501
Fuel (474 pounds of bituminous coal) used in rail mill.	.224	.017	.030	.004	.....	.046	.....	.321
Total gross cost of one ton (2,240 pounds) of steel rails.	8.104	.531	2.643	.196	3.894	.663	5.291	21.322
Deduct value of scrap produced in ingot, bloom, and rail mills.....								1.687
Total net cost of one ton (2,240 pounds) of steel rails.....								19.635

a The expenditures for taxes are inseparably combined with those for supplies and repairs.

b The expenditures for officials and clerks are inseparably combined with those for supplies and repairs.

COST OF DIRECT LABOR, ETC., IN ONE TON OF STEEL RAILS—Concluded.

SUMMARY OF THE FOREGOING.

Total cost of ore, limestone, coal, and coke	\$13. 195
Cost of direct labor in producing the above materials	\$4. 047
Per cent. of cost of direct labor in producing the above materials	31
Total cost of converting above materials into pig iron	\$3. 124
Cost of direct labor in converting above materials into pig iron	\$1. 248
Per cent. of cost of direct labor in converting above materials into pig iron	40
Total cost of converting pig iron into steel ingots	\$2. 389
Cost of direct labor in converting pig iron into steel ingots	\$1. 161
Per cent. of cost of direct labor in converting pig iron into steel ingots	49
Total cost of converting steel ingots into steel blooms	\$0. 792
Cost of direct labor in converting steel ingots into steel blooms	\$0. 383
Per cent. of cost of direct labor in converting steel ingots into steel blooms	48
Total cost of converting steel blooms into 2,240 pounds of steel rails	\$1. 822
Cost of direct labor in converting steel blooms into 2,240 pounds of steel rails	\$1. 267
Per cent. of cost of direct labor in converting steel blooms into 2,240 pounds of steel rails	70
Total net cost of one ton of steel rails	\$12. 035
Cost of direct labor in one ton of steel rails	\$8. 104
Per cent. of cost of direct labor in one ton of steel rails	41

Labor cost in one ton of steel rails, speaking now of labor cost after all the materials have been assembled in the steel works and are ready to be subjected to the proper manipulations for the production of standard steel rails, should, from the conditions existing, be less per ton relatively in this country than in Great Britain or on the continent of Europe, because American producers of rails dispense with at least one expensive process still adhered to by many foreign producers, and, furthermore, our materials in the United States—ore, etc.—are purer than those used in most other countries; hence the quantity of ore required for the production of a ton of standard rails is less here than in foreign countries, and of course the labor required to handle the materials necessary to produce a ton is, in consequence, less here. This is more clearly shown by reference to the tabular statements which have just been given, showing the analysis of cost of one ton of steel rails in the United States, in Great Britain, and on the continent of Europe, wherein it is seen that in establishment number 1, in the United States, only 4,137 pounds of iron ore were necessary for the production of one ton of standard rails, while in establishment number 12, in Great Britain, 5,127 pounds, nearly 1,000 more, were needed to produce a ton of practically the same kind of rails, and in establishment number 3, on the continent of Europe, 5,701 pounds, or nearly 1,600 pounds more, of iron ore were necessary for the production of one ton of standard steel rails. These three establishments, numbers 1, 12, and 3, are probably far more indicative of the true conditions surrounding the production of standard steel rails in the respective countries than any of the others given in Table VI. As already remarked they are the only ones for which such analytical statements as those just given could be drawn. From these statements it will be seen that for the establishments given the direct labor cost of producing a ton of standard steel rails in the United States is \$11.597, in Great Britain, \$7.817, and on the continent of Europe, \$8.104, showing a difference, against the United States of \$3.78 in favor of Great Britain, and of \$3.493 in favor of the continent of Europe.

PRICES OF STEEL RAILS IN UNITED STATES AND GREAT BRITAIN.

The next table shows the prices of steel rails in the United States and Great Britain for the years 1867 to 1890, inclusive.

The prices of British steel rails at British ports from 1867 to 1878, inclusive, are taken from a statement presented by Mr. H. V. Poor to the Ways and Means committee of the house of representatives in February, 1880; for 1879 the price is an average from Fossick's chart, an English statistical publication of high standing; and for 1880 to 1890, inclusive, the prices have been averaged from weekly English quotations in the New York Iron Age. Mr. Poor's figures represent average quotations. All the other figures in the table are compiled from the statistical reports of the American Iron and Steel Association.

AVERAGE PRICES OF STEEL RAILS.

Year.	United States.		Great Britain.		Year.	United States.		Great Britain.	
	Average price of gold.	Average price of rails in currency.	Price in gold £. s. d. at British ports.	Cost in currency at American ports.		Average price of gold.	Average price of rails in currency.	Price in gold £. s. d. at British ports.	Cost in currency at American ports.
1867	126	\$196.00	893.79	\$125.00	1879	100	\$48.25	\$28.00	\$57.68
1868	129	196.30	81.22	125.00	1880	100	67.50	34.42	65.42
1869	130	122.35	34.00	112.32	1881	100	61.12	30.41	61.41
1870	115	196.75	30.27	67.44	1882	100	68.50	26.27	57.27
1871	117	148.20	34.00	96.21	1883	100	77.75	22.72	82.72
1872	117	112.00	67.04	110.60	1884	100	36.75	23.19	48.19
1873	115	176.40	80.00	122.22	1885	100	38.30	22.11	62.11
1874	117	96.25	62.75	100.57	1886	100	34.30	18.70	30.70
1875	114	60.75	64.25	85.82	1887	100	37.00	18.70	30.70
1876	119	36.20	52.12	60.42	1888	100	29.62	19.15	30.15
1877	105	68.24	20.29	62.21	1889	100	29.25	24.57	44.57
1878	102	62.25	25.25	57.00	1890	100	21.50	21.00	41.00

a Price in June.

The tables following give respectively the average monthly prices of steel rails at works in Pennsylvania since 1868, and the market price of steel rails per ton in Great Britain.

AVERAGE MONTHLY PRICES OF STEEL RAILS AT WORKS IN PENNSYLVANIA.

[Compiled by the American Iron and Steel Association. Averaged monthly from weekly quotations. Per ton of 2,240 pounds.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average.
1868..	\$165	\$167½	\$174	\$172	\$165	\$162½	\$150	\$150	\$150	\$150	\$148	\$147½	\$150½
1869..	145	143½	135	134	130½	128	130	130	130	130½	130½	129	122½
1870..	110	110	108½	107	108	109½	110	110	108½	101½	102½	98	106½
1871..	95	96	106	95	103	104	103½	104	106	105½	103½	100½	102½
1872..	104½	104	104½	111½	110	113	114½	113½	114	113½	118	120½	112
1873..	121	120	122½	120½	120	121½	121½	121½	118	120	120	120	120½
1874..	117½	117½	115	98½	98½	96½	91	88½	78½	74	75½	75½	94½
1875..	71	71	71	69	69	69	69	69	69	67	68	65	68½
1876..	67	65	62	63	62	60	58	59	54	51	53	52	59½
1877..	49	49	49	49	47½	48½	45½	44½	44	42½	40½	40½	43½
1878..	41	41½	41½	42	42½	43	42½	42½	42½	42	42	41	42½
1879..	41	43	43	42½	42	43	44	48	50	55	61	67	48½
1880..	75	65	62	75	65	63½	62½	63½	61½	60	50	59	67½
1881..	60	62	62½	62	63	60	61	60	60	60	61½	60	61½
1882..	58	55	54	52½	48½	48½	48	47	45	44½	43	39	48½
1883..	40	39½	39	38½	38	38	38	38	37½	37	35	34½	37½
1884..	34	34	34	34	33	32	30	29	27	28	28	27	30½
1885..	27	27	24½	26	27	27½	27½	27½	29	29½	33	34½	29½
1886..	34½	34½	34½	34½	34½	34½	34½	31½	31	31	31½	31½	34½
1887..	32½	30½	30½	30½	30	30	30½	37	36	34	32½	32	37½
1888..	31½	31½	31½	31½	31	30	30	29	28½	28	27½	26	29½
1889..	27½	27½	27½	27½	27	27½	28	28	29½	32	34	35	29½
1890..	35½	35	34	33½	31½	31½	31½	31½	30½	30	30	28½	31½

MARKET PRICE OF STEEL RAILS PER TON IN GREAT BRITAIN.

[From The Economist (London) Monthly Trade Supplement of November 15, 1890.]

Date.	Steel rails.	Date.	Steel rails.	Date.	Steel rails.
1888.		1889.		1890.	
January 7	\$20.38	January 4	\$20.87	January 3	\$24.07
March 3	19.47	February 3	18.56	February 1	32.85
June 8	18.25	March 1	20.38	March 1	31.63
August 4	18.86	April 6	22.31	April 1	30.11
September 8	19.16	May 4	22.81	May 2	25.25
October 5	18.56	June 8	22.90	June 6	33.72
November 2	19.77	July 6	22.11	July 4	24.32
December 7	20.07	August 8	24.12	August 1	25.65
		September 10	24.94	September 5	25.55
		October 6	25.55	October 3	25.85
		November 2	32.85	November 1	25.65
		December 6	32.46		

MISCELLANEOUS STEEL.

MISCELLANEOUS STEEL.

The titles of Table VII and its sub-tables are as follows :

TABLE VII.—Cost of Production of Miscellaneous Steel at Various Establishments in Various States.

- A.—Period covered and quantity of product.
 B.—Quantity and cost of materials used.
 C.—Proportions of materials used.
 D.—General statement of cost for the period.
 E.—Elements of cost in one ton of 2,240 pounds.
 F.—Per cent. of each element of cost in one ton of 2,240 pounds.
 G.—Additional cost of certain theoretical elements.
 H.—Additional cost of certain theoretical elements in one ton of 2,240 pounds.

The tables include a great variety of products which show a great variety of costs. The quality of the product, which doubtless plays an important part in determining its cost, is not well defined in the reports obtained, and the description found in sub-table A is the best that could be done towards expressing it.

In general the remarks prefaced to Table IV, relating to miscellaneous iron products, are applicable here and should be read in connection with a study of these tables.

TABLE VII.—COST OF PRODUCTION OF MISCELLANEOUS STEEL AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT.

Establishment number.	Locality.	Period covered.		Miscellaneous steel produced.		
		Terminal dates.	Days of running time.	Description.	Tons of 2,240 pounds.	
					Total.	Per day.
1	Continent of Europe.	Apr. 1, 1888, to Mar. 31, 1889	(a)	Bands (hoop steel).....	(a)	(a)
2	United States.	Jan. 1, 1889, to Dec. 31, 1889	(a)	Bars.....	2,235	(a)
3	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Bars (No. 1).....	2,227	(a)
4	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Bars (No. 1½).....	294	(a)
5	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Bars (No. 2).....	521	(a)
6	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Bars (spike bars).....	182	(a)
7	Continent of Europe.	Jan. 13, 1889, to Apr. 6, 1889	70	Bars (small size).....	133	2
8	do	Jan. 13, 1889, to Apr. 6, 1889	70	Bars (large size).....	184	3
9	do	Jan. 13, 1889, to Apr. 6, 1889	70	Bars (for springs).....	739	11
10	do	July 1, 1888, to June 30, 1889	211	Bars (rod, fish plates, etc.).....	6,643	31
11	Great Britain	Apr. 1, 1888, to Sept. 29, 1888	(a)	Bars (tin plate).....	2,695	(a)
12	United States.	Jan. 1, 1889, to Dec. 31, 1889	110	Bullets.....	37,160	338
13	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Bullets (No. 2).....	1,242	(a)
14	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Bullets (No. 3).....	6,889	(a)
15	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Bullets (½ inch).....	247	(a)
16	do	Jan. 3, 1889, to Jan. 3, 1890	167	Bullets and slabs.....	21,916	131
17	do	Jan. 7, 1889, to July 1, 1889	117	Bullets and nail slabs.....	25,392	216
18	Continent of Europe.	Jan. 13, 1889, to Apr. 6, 1889	70	Billets.....	1,616	23

a Not reported.

TABLE VII.—COST OF PRODUCTION OF MISCELLANEOUS STEEL AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT—Concluded.

Establishment number.	Locality.	Period covered.		Miscellaneous steel produced.		
		Terminal dates.	Days of running time.	Description.	Tons of 2,240 pounds.	
					Total.	Per day.
19	Continent of Europe.	July 1, 1888, to June 30, 1889	43	Billets	6,427	149
20	do	Apr. 1, 1889, to Mar. 31, 1890	(a)	Billets and bars (for plates).	(a)	(a)
21	do	Apr. 1, 1888, to Mar. 31, 1889	(a)	Billets and bars (for plates).	(a)	(a)
22	do	Apr. 1, 1889, to Mar. 31, 1890	(a)	Billets, bars, rails, and slab plates.	(a)	(a)
23	do	Apr. 1, 1888, to Mar. 31, 1889	(a)	Billets, bars, rails, and slab plates.	(a)	(a)
24	Great Britain	Apr. 1, 1888, to Sept. 29, 1888	(a)	Billets	6,321	(a)
25	United States.	Jan. 1, 1889, to Dec. 31, 1889	16	Blooms	9,669	604
26	do	Jan. 1, 1889, to Dec. 31, 1889	269	Blooms and billets	64,684	240
27	do	Jan. 1, 1888, to Dec. 31, 1888	263	Blooms and billets	52,962	201
28	do	Jan. 1, 1889, to Jan. 4, 1890	190	Blooms, billets, and nail slabs.	61,240	308
29	do	Jan. 1, 1889, to Dec. 31, 1889	281	Blooms, billets, and slabs ..	55,038	198
30	Continent of Europe.	Jan. 13, 1889, to Apr. 6, 1889	70	Blooms	17,323	250
31	Great Britain	Apr. 1, 1888, to Sept. 29, 1888	128	Blooms	46,667	366
32	do	Apr. 1, 1888, to Sept. 29, 1888	62	Blooms	11,453	123
33	do	July 29, 1889, to Aug. 3, 1889	54	Blooms, billets, and slabs (hammered).	1,511	273
34	do	July 29, 1889, to Aug. 3, 1889	54	Blooms, billets, bars, plates, and rods.	1,896	345
35	United States.	Dec. 1, 1889, to Dec. 31, 1889	34	Plates (boiler and ship)....	448	19
36	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Plates (light)	04	(a)
37	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Plates (medium)	677	(a)
38	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Plates (heavy)	511	(a)
39	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Plates (railroad tie)	219	(a)
40	do	Jan. 1, 1889, to Dec. 31, 1889	(a)	Plates (railroad tie)	182	(a)
41	do	Nov. 1, 1888, to Oct. 31, 1889	290	Plates (boiler and tank)....	6,004	21
42	do	July 1, 1889, to Dec. 31, 1889	150	Plates (boiler, bridge, and ship).	6,000	40
43	Continent of Europe.	July 1, 1888, to June 30, 1889	8	Plates	866	146
44	do	1888 (b)	(a)	Plates	(a)	(a)
45	do	Apr. 1, 1889, to Mar. 31, 1890	(a)	Plates	(a)	(a)
46	do	Apr. 1, 1888, to Mar. 31, 1889	(a)	Plates	13,324	(a)
47	do	Apr. 1, 1889, to Mar. 31, 1890	(a)	Plates (light)	(a)	(a)
48	do	Apr. 1, 1889, to Mar. 31, 1890	(a)	Plates (light)	(a)	(a)
49	do	Apr. 1, 1889, to Mar. 31, 1890	(a)	Plates (heavy)	(a)	(a)
50	do	Apr. 1, 1889, to Mar. 31, 1890	(a)	Plates (heavy)	(a)	(a)
51	do	Apr. 1, 1889, to Mar. 31, 1890	(a)	Plates (superior quality) ..	(a)	(a)
52	do	Apr. 1, 1889, to Mar. 31, 1890	(a)	Plates (superior quality) ..	(a)	(a)
53	Great Britain	Jan. 1, 1889, to June 30, 1889	128	Plates	13,448	97
54	do	Apr. 1, 1889, to Sept. 3, 1888	122	Plates (slab)	7,778	23
55	Continent of Europe.	July 1, 1888, to June 30, 1889	62	Railway ties	7,107	137
56	Great Britain	Apr. 1, 1889, to Sept. 29, 1888	(a)	Railway sleepers	340	(a)
57	Continent of Europe.	Jan. 13, 1889, to Apr. 6, 1889	60	Slabs	416	6
58	do	July 1, 1889, to June 30, 1889	256	Slabs (hammered)	19,890	77
59	do	July 1, 1889, to June 30, 1889	290	Tires (locomotive and car wheels)	4,273	20
60	United States	Jan. 1, 1889, to Dec. 31, 1889	290	Wire	26,797	127
61	do	Jan. 1, 1889, to Dec. 31, 1889	290	Wire rods	26,483	60
62	do	July 1, 1889, to June 30, 1889	170	Wire (unstranded)	4,952	29

a Not reported.

b Terminal dates not reported.

TABLE VII.—COST OF PRODUCTION OF MISCELLANEOUS STEEL AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

B.—QUANTITY AND COST OF MATERIALS USED.

[Establishments numbers 2 to 6, 12 to 17, 23 to 26, 33 to 41, 46, and 61 are in the United States; numbers 1, 7 to 10, 18 to 22, 30, 43 to 52, 53, 57 to 59, and 62 are on the continent of Europe; and numbers 11, 24, 31 to 34, 54, 56, and 58 are in Great Britain.]

Establishment number.	Tons of 2,240 pounds.				Cost.				
	Ingot.	Blooms.	Billets.	Other.	Ingot.	Blooms.	Billets.	Other.	Total.
1	(a)				(a)				(a)
2		1,297	1,381		\$14,402		\$11,106		\$73,598
3		37	2,467	5108	1,034		83,005	\$31,706	87,805
4			841				11,916		11,916
5			603	59			21,927	\$145	21,172
6			198				5,224		5,224
7	152				83,598				2,586
8			211				4,406		4,406
9			5607	(c)			\$17,276	(c)	17,276
10	7,502				143,333				143,333
11		2,913				48,616			48,616
12	43,396				996,984				996,984
13		1,203	133			82,248	8,812		35,737
14	210	4,373	2,535	87	5,226	118,739	66,788	\$115	190,538
15		264				8,204			8,204
16	24,017				583,554				583,554
17	28,743				611,495				611,495
18	41,654	(d)			\$31,714	(d)			31,714
19		7,366				124,177			124,177
20	(e)				(e)				(e)
21	(e)				(e)				(e)
22	(e)				(e)				(e)
23	35,030				568,912				568,912
24		8,537				102,317			102,317
25	10,681				257,434				257,434
26	74,130				1,362,167				1,362,167
27	61,690				1,304,360				1,304,360
28	68,700				1,408,578				1,408,578
29	81,200				1,422,000				1,422,000
30	18,145				285,339				285,339
31	51,555				724,330				724,330
32	12,106				170,244				170,244
33	1,677				535,712				535,712
34	3,103				544,773				544,773
35	515				18,540				18,540
36			110				8,742		8,742
37			179				26,586		26,586
38			170	f 355			0,061	f 10,423	10,486
39			27				7,912		7,912
40			206				7,123		7,123
41	7,860				218,860				218,860
42	7,509				226,509				226,509
43	1,007				17,310				17,310
44	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)
45	(g)				(g)				(g)
46	17,147				350,930				350,930
47	(g)				(g)				(g)
48	(h)				(h)				(h)
49	(h)				(h)				(h)
50	(h)				(h)				(h)
51	(h)				(h)				(h)
52	(h)				(h)				(h)
53	21,115				354,975				354,975
54		680	2,803	g 82		11,071	82,090	g 310	84,266
55	8,326				142,609				142,609
56		405				6,336			6,336
57	512				8,512				8,512
58	21,973				379,190				379,190
59				h 4,525				h 69,219	69,219
60				137,754				1,027,973	1,027,973
61			20,663				240,427		240,427
62			5,472				100,007		100,007

a Not reported.

b Scrap.

c The quantity and cost of other materials (scrap) are inseparably combined with the quantity and cost of billets.

d The quantity and cost of blooms are inseparably combined with the quantity and cost of ingots.

e This amount represents the total net cost of ingots; the gross cost of ingots is not reported.

f Slabs.

g Bad ingots.

h Steel.

i Steel rods.

TABLE VII.—COST OF PRODUCTION OF MISCELLANEOUS STEEL AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

C.—PROPORTIONS OF MATERIALS USED.

[Establishments numbers 2 to 6, 12 to 17, 25 to 29, 35 to 42, 60, and 61 are in the United States; numbers 1, 7 to 10, 18 to 24, 30, 43 to 52, 53, 57 to 59, and 62 are on the continent of Europe; and numbers 11, 24, 31 to 34, 33, 54, and 56 are in Great Britain.]

Establishment number.	Pounds of materials to one ton of product.				Cost of materials per ton of 2,240 pounds.			
	Ingot.	Blooms.	Billets.	Other.	Ingot.	Blooms.	Billets.	Other.
1	(a)				(a)			
2		1,300	1,384		\$26.594	\$20.765		
3		37	2,481	b 100	27.046	34.457		b \$16.352
4			2,508			34.944		
5			2,503	b 39		34.871		b 10.111
6			2,437			28.535		
7	2,500				\$22.671			
8			2,500			21.166		
9			a 2,449	(c)		a 21.410		(c)
10	2,540				16.954			
11		2,421				10.689		
12	2,616				22.974			
13		2,170	240			26.804	26.406	
14	73	1,464	640	b 2	21.863	26.603	27.145	b 16.429
15		2,394				31.076		
16	2,516				22.693			
17	2,513				21.875			
18	a 2,705	(d)			a 10.230	(d)		
19		2,567				16.606		
20	(a)				(a)			
21	(a)				(a)			
22	(a)				(a)			
23	2,680				16.174			
24		2,317				15.657		
25	2,463				24.216			
26	2,567				20.538			
27	2,814				21.072			
28	2,516				21.741			
29	2,401				22.450			
30	2,268				15.728			
31	2,321				14.063			
32	2,410				14.063			
33	2,486				a 21.295			
34	2,485				a 21.291			
35	2,575				26.000			
36			2,514				34.018	
37			2,548				34.527	
38			272	f 1,550			34.438	f 20.266
39			a 582				27.571	
40			2,635				34.602	
41	2,850				31.000			
42	2,800				30.200			
43	2,605				17.190			
44	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
45	(a)				(a)			
46	2,823				16.285			
47	(a)				(a)			
48	(a)				(a)			
49	(a)				(a)			
50	(a)				(a)			
51	(a)				(a)			
52	(a)				(a)			
53	3,517				10.842			
54		532	2,710	g 26		16.774	18.256	g 0.900
55	2,627				17.228			
56		2,664				15.652		
57	2,757				17.270			
58	2,500				17.257			
59				h 2,371				h 20.064
60				i 2,208				i 43.121
61			2,500				28.320	
62			3,475				19.047	

a Not reported.

b Scrap.

c The quantity and cost of other materials (and are inseparably combined with the quantity and cost of billets.

d The quantity and cost of blooms are inseparably combined with the quantity and cost of ingots.

e This amount represents the net cost of ingots per ton; the gross cost of ingots per ton is not reported.

f Slabs.

g Bad ingots.

h Steel.

i Steel rods.

TABLE VII.—COST OF PRODUCTION OF MISCELLANEOUS STEEL AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

D.—GENERAL STATEMENT OF COST FOR THE PERIOD.

[Establishments numbers 2 to 6, 12 to 17, 25 to 29, 35 to 43, 60, and 61 are in the United States; numbers 1, 7 to 10, 18 to 24, 30, 45 to 52, 55, 57 to 59, and 62 are on the continent of Europe; and numbers 11, 24, 31 to 34, 53, 54, and 56 are in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Materials.			Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
	Gross.	Value of under, scrap, etc.	Net.						
1.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
2.....	\$75,598	\$4,303	\$71,295	\$12,212	\$773	\$2,572	\$1,289	\$413	\$80,548
3.....	87,808	2,171	85,634	22,288	1,850	2,987	1,558	978	114,269
4.....	11,916	332	11,583	3,016	212	513	308	129	15,659
5.....	21,172	716	20,456	6,640	428	888	365	228	28,059
6.....	5,254	124	5,130	1,078	63	183	104	34	6,000
7.....	2,598	154	2,444	539	(b)	286	b 108	(b)	b 4,582
8.....	4,486	239	4,227	b 410	(b)	230	b 279	(b)	b 5,402
9.....	17,278	611	16,767	b 1,489	(b)	661	b 975	(b)	b 20,599
10.....	143,333	6,698	136,635	11,378	1,170	1,023	17,091	179	169,674
11.....	48,616	1,845	46,771	2,685	101	1,333	1,210	43	63,652
12.....	999,084	72,303	924,681	60,322	11,225	18,191	10,945	2,300	1,028,654
13.....	5,757	527	5,230	3,247	430	1,467	320	229	8,314
14.....	190,800	4,299	186,500	31,666	2,313	7,355	2,630	1,273	234,247
15.....	8,104	112	8,092	1,042	85	250	141	45	9,066
16.....	563,654	1,949	561,605	27,945	2,850	6,114	9,122	407	607,123
17.....	611,493	8,648	602,847	29,355	3,288	7,808	23,030	651	669,439
18.....	31,714	3,535	28,179	b 632	(b)	683	b 515	(b)	b 30,328
19.....	123,177	6,478	116,699	5,334	591	1,777	6,178	90	172,647
20.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
21.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
22.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
23.....	500,012	40,175	459,837	53,547	234,685	6,140	21,342	(e)	d 642,451
24.....	102,317	898	101,419	5,641	247	2,804	4,288	100	115,396
25.....	257,438	12,365	245,073	18,609	2,600	2,984	3,550	88	280,073
26.....	1,552,160	21,445	1,530,714	80,889	6,651	17,598	17,833	531	1,653,298
27.....	1,304,360	6,072	1,300,288	58,604	4,073	14,266	19,399	825	1,384,105
28.....	1,495,578	2,543	1,493,035	79,947	2,005	19,000	21,028	5,378	1,622,943
29.....	1,422,800	33,385	1,389,415	99,941	12,000	35,786	38,713	1,860	1,537,435
30.....	285,280	894	284,386	e 2,779	(e)	2,834	e 3,339	(a)	e 296,504
31.....	724,330	6,738	717,592	20,278	1,253	20,392	17,288	147	777,853
32.....	170,244	6,703	163,541	9,654	428	6,348	7,598	178	188,742
33.....	(a)	(a)	25,712	1,206	16	174	785	(S)	27,442
34.....	(a)	(a)	44,775	4,016	119	803	7,384	(S)	56,989
35.....	18,540	1,030	17,510	2,832	224	677	112	167	21,472
36.....	3,742	89	3,653	1,111	78	159	93	44	4,109
37.....	26,546	84	25,702	6,139	576	1,121	614	307	34,303
38.....	16,486	43	16,443	4,067	436	876	467	232	22,125
39.....	7,813	379	7,434	1,474	86	516	113	46	9,799
40.....	7,128	227	6,901	1,668	155	173	173	83	8,152
41.....	243,660	26,680	216,980	49,192	3,473	8,662	9,373	547	287,787
42.....	216,500	12,000	204,500	34,725	6,000	15,000	18,000	1,400	280,625
43.....	17,310	1,003	16,307	799	85	256	963	13	18,413
44.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
45.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
46.....	280,950	37,574	243,376	45,688	e 18,280	7,288	16,175	(e)	d 321,40
47.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
48.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
49.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
50.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
51.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
52.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

a Not reported.

b In establishment number 7, general expenses amounting to \$169, and expenses on bars amounting to \$117, and in establishment number 8 general expenses amounting to \$145, and expenses on bars amounting to \$161, and in establishment number 9, general expenses amounting to \$519, and expenses on bars amounting to \$11, and in establishment number 18, general expenses amounting to \$300, are included in the totals, but are not included elsewhere. The former (general expenses) covers taxes and insurance, and includes a part of the pay of officials and clerks, together with a small amount properly chargeable to labor and to supplies and repairs; the latter (expenses on bars) embraces a part of the pay of officials and clerks and of labor. The office has no knowledge of the proper segregation in these cases.

c The expenditures for taxes and insurance are inseparably combined with those for officials and clerks.

d Including insurance.

e General expenses, amounting to \$1070, are included in the total, but are not included elsewhere; the item covers taxes and insurance and includes a part of the pay of officials and clerks, together with a small amount properly chargeable to labor and to supplies and repairs. The office has no knowledge of the proper segregation in these cases.

f The expenditures for taxes are inseparably combined with those for supplies and repairs.

TABLE VII.—COST OF PRODUCTION OF MISCELLANEOUS STEEL AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

D.—GENERAL STATEMENT OF COST FOR THE PERIOD—Concluded.

[Establishments numbers 2 to 6, 12 to 17, 31 to 29, 35 to 42, 60, and 61 are in the United States; numbers 1, 7 to 10, 18 to 23, 30, 43 to 52, 53, 57 to 60, and 62 are on the continent of Europe; and numbers 1, 21, 31 to 34, 53, 54, and 58 are in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Materials.			Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
	Gross.	Value of scrap, etc.	Net.						
52	\$354,975	\$78,608	\$276,366	\$50,401	\$914	\$28,843	\$20,282	\$180	\$368,899
54	94,348	8,518	85,830	10,174	185	2,313	1,875	44	70,479
56	142,699	10,095	132,604	7,839	675	2,118	15,721	167	159,074
58	6,339	574	5,765	994	13	231	177	3	7,183
57	8,842	934	7,908	8,770	(a)	878	8,250	(a)	10,248
59	379,110	13,900	365,210	18,015	1,792	6,623	12,621	276	404,017
60	99,439	855	99,075	7,589	675	2,681	8,127	167	118,254
61	1,027,973	.....	1,027,973	533,208	24,000	80,305	99,323	1,000	1,365,867
62	849,427	15,891	824,536	88,494	12,000	56,593	10,858	1,500	996,961
63	109,697	8,049	104,048	13,801	753	5,127	8,934	119	128,842

a General expenses, amounting to \$361, and expenses on slabs, amounting to \$78, are included in the total, but are not included elsewhere; the former (general expenses) covers taxes and insurance, and includes a part of the pay of officials and clerks, together with a small amount properly chargeable to labor and to supplies and repairs; the latter (expenses on slabs) embraces a part of the pay of officials and clerks and of labor. The office has no knowledge of the proper segregation in these cases.

TABLE VII.—COST OF PRODUCTION OF MISCELLANEOUS STEEL AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

E.—ELEMENTS OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 3 to 6, 12 to 17, 25 to 28, 35 to 42, 60, and 61 are in the United States; numbers 1, 7 to 10, 18 to 23, 29, 43 to 52, 55, 57 to 59, and 62 are on the continent of Europe; and numbers 11, 24, 31 to 34, 53, 54, and 56 are in Great Britain. Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Materials.						Value of cinder, scrap, etc.	Net.	Labor.	Officials and cl'ks.	Fuel.	Supplies and re-pairs.	Taxes.	Total.
	Gross.				Total.									
	Ingot.	Blooms.	Bil-lets.	Other.										
1	\$20.618					\$20.618	\$1.872	\$18.746	92.365	\$1.980	\$0.226	\$0.562	(a)	b \$22.990
2		\$15.472	\$18.397			33.874	1.925	31.899	5.911	.346	1.151	.573	\$0.185	40.085
3		.485	38.170	\$40.793		39.428	1.424	38.004	9.997	.822	1.340	.700	.438	51.307
4			40.531			40.531	1.303	39.229	10.758	.823	1.743	.701	.439	53.194
5			40.359	e. 278		40.637	1.374	39.263	10.829	.821	1.604	.701	.438	53.264
6			28.868			28.868	.681	28.187	5.912	.345	1.061	.571	.187	36.204
7	27.053					27.053	1.158	25.895	42.092	(d)	2.150	d 1.283	(d)	d 34.451
8			24.272			24.272	1.209	23.073	d 2.220	(d)	1.250	d 1.245	(d)	d 29.359
9			22.412	(e)		22.412	.692	22.720	d 1.986	(d)	1.107	d 1.321	(d)	d 27.012
10	21.570					21.570	1.008	20.562	1.742	.178	.455	2.572	.027	25.534
11		18.039				18.039	.684	17.355	1.390	.087	.495	.675	.016	19.906
12	28.830					28.830	1.940	26.894	1.623	.302	.600	.204	.080	27.688
13		25.902	2.828			28.730	.424	28.306	4.255	.348	1.181	.672	.184	34.874
14	.781	17.451	10.284	s. 017		28.533	.643	27.890	4.777	.346	1.100	.573	.184	34.870
15		33.215				33.215	.454	32.761	4.233	.344	1.049	.571	.182	36.100
16	25.714					25.714	.089	25.625	1.270	.130	.238	.410	.023	27.703
17	24.206					24.206	.342	23.864	1.182	.180	.311	.991	.020	26.504
18	19.601	(f)				19.601	2.185	17.416	d .391	(d)	.410	d .237	(d)	d 18.744
19		10.477				10.477	1.006	9.469	.830	.082	.278	.361	.014	20.612
20	18.613					18.613	1.001	17.612	1.219	d 1.250	.152	.648	(a)	b 20.681
21	18.378					18.378	.912	17.466	1.079	d 1.163	.208	.561	(a)	b 20.670
22	19.106					19.106	1.270	17.836	1.604	d 1.204	.157	.716	(a)	b 21.607
23	19.205					19.205	1.361	17.844	1.816	d 1.175	.208	.729	(a)	b 21.784
24		16.192				16.192	.142	16.050	.692	.039	.584	.675	.010	18.255
25	26.625					26.625	1.279	25.346	1.434	.352	.300	.288	.009	27.613
26	23.906					23.906	.331	23.565	1.252	.068	.272	.278	.008	25.559
27	24.628					24.628	.977	24.651	1.108	.064	.289	.389	.010	26.399
28	24.422					24.422	.042	24.380	1.306	.067	.311	.243	.104	26.501
29	25.854					25.854	.607	25.247	1.089	.218	.650	.704	.037	27.545
30	15.923					15.923	.046	15.877	g .185	(g)	.158	g .189	(g)	g 16.544
31	14.575					14.575	.115	14.460	.400	.023	.410	.248	.003	15.651
32	15.129					15.129	.507	14.622	.856	.034	.564	.675	.016	16.773
33	(A)					(A)	(A)	22.635	.708	.010	.115	6.480	(4)	25.444
34	(A)					(A)	(A)	23.615	2.118	.002	.367	6.730	(4)	28.603
35	41.384					41.384	2.299	39.085	6.321	.500	1.400	.250	.373	47.920
36		38.181				38.181	.908	37.273	11.837	.847	1.622	.949	.449	52.479
37		39.271				39.271	1.306	37.965	9.138	.851	1.656	.951	.453	51.093
38		11.401	30.401			32.262	.000	32.108	7.659	.853	1.715	.953	.454	44.100
39		31.779				31.779	1.523	30.257	5.920	.345	2.072	.574	.185	39.353
40		39.165				39.165	1.247	37.918	9.165	.852	.845	.960	.450	50.288
41	39.984					39.984	4.411	35.573	8.072	.570	1.458	1.458	.000	47.225
42	37.750					37.750	2.000	35.750	5.750	1.000	2.500	3.000	.200	48.238
43	19.088					19.088	1.188	18.900	.923	.088	.284	1.191	.015	21.261

a The expenditures for taxes and insurance are inseparably combined with those for officials and clerks.

b Including insurance.

c Scrap.

d In establishment number 7, general expenses, amounting to \$1.271 per ton, and expenses on bars amounting to 86 cents per ton, and in establishment number 8, general expenses amounting to 73.8 cents per ton, and expenses on bars amounting to 87.5 cents per ton, and in establishment number 9, general expenses amounting to 70.3 cents per ton, and expenses on bars amounting to 1.5 cents per ton, and in establishment number 18, general expenses amounting to 19 cents per ton are included in the totals, but are not included elsewhere; the former (general expenses) covers taxes and insurance, and includes a part of the pay of officials and clerks, together with a small amount properly chargeable to labor and to supplies and repairs; the latter (expenses on bars) embraces a part of the pay of officials and clerks and of labor. The office has no knowledge of the proper segregation in these cases.

e The expenditures for other materials (ends) are inseparably combined with those for billets.

f The expenditures for blooms are inseparably combined with those for ingots.

g General expenses amounting to 17.1 cents per ton are included in the total, but are not included elsewhere; the item covers taxes and insurance, and includes a part of the pay of officials and clerks, together with a small amount properly chargeable to labor, and to supplies and repairs. The office has no knowledge of the proper segregation in these cases.

A Not reported.

i The expenditures for taxes are inseparably combined with those for supplies and repairs.

j Slabs.

TABLE VII.—COST OF PRODUCTION OF MISCELLANEOUS STEEL
AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.

F.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 2 to 6, 12 to 17, 25 to 29, 35 to 42, 60, and 61 are in the United States; numbers 1, 7 to 10, 18 to 23, 30, 43 to 52, 55, 57 to 59, and 62 are on the continent of Europe; and numbers 11, 24, 31 to 34, 53, 54 and 59 are in Great Britain. This table is based on the preceding one, and to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader is referred to that table for such information as they furnish.]

Estab- lishment number.	Materials (net).	Labor.	Officials and clerks.	Fuel.	Supplies and repairs.	Taxes.	Total.
1	81.54	10.28	4.65	.96	2.57	.....	100
2	79.62	14.75	.87	2.87	1.43	.46	100
3	74.07	19.49	1.60	2.62	1.37	.83	100
4	73.74	19.28	1.55	3.28	1.32	.83	100
5	72.90	20.10	1.53	3.36	1.30	.81	100
6	77.73	16.30	.95	2.93	1.57	.52	100
7	75.16	8.69	.....	6.24	3.67	.....	100
8	78.25	7.59	.....	4.26	4.24	.....	100
9	81.40	7.12	.....	4.18	4.73	.....	100
10	80.53	6.82	.69	1.78	10.07	.11	100
11	87.18	6.68	.18	2.49	3.39	.08	100
12	89.89	5.87	1.09	1.77	1.06	.32	100
13	81.34	12.11	.99	3.39	1.64	.53	100
14	79.98	13.70	.99	3.18	1.64	.53	100
15	83.72	10.79	.88	2.68	1.46	.47	100
16	92.50	4.61	.47	.84	1.50	.08	100
17	90.04	4.46	.49	1.17	3.74	.10	100
18	92.91	2.09	.....	2.19	1.80	.....	100
19	89.47	4.02	.45	1.34	4.65	.07	100
20	84.34	5.84	5.99	.73	3.10	.....	100
21	85.32	5.27	5.63	1.02	2.76	.....	100
22	81.79	8.27	5.94	.72	3.28	.....	100
23	81.99	8.33	5.40	.96	3.32	.....	100
24	87.92	4.88	.21	3.20	3.70	.09	100
25	91.08	5.16	1.30	1.11	1.32	.03	100
26	92.59	4.90	.34	1.06	1.08	.03	100
27	93.00	4.20	.35	1.02	1.39	.04	100
28	92.00	4.93	.22	1.17	1.29	.39	100
29	90.38	3.90	.78	2.33	2.52	.09	100
30	95.95	.94	.....	.96	1.12	.....	100
31	92.37	2.61	.16	2.62	2.22	.02	100
32	87.18	5.11	.23	3.36	4.02	.10	100
33	94.37	3.19	.04	.46	1.94	.....	100
34	87.81	7.88	.23	1.37	2.71	.....	100
35	81.55	13.19	1.04	2.62	.52	.78	100
36	71.03	21.60	1.61	3.09	1.81	.86	100
37	74.43	17.90	1.67	3.25	1.86	.89	100
38	72.94	18.05	1.93	3.89	2.16	1.03	100
39	76.89	15.04	.88	5.26	1.46	.47	100
40	75.40	18.23	1.69	1.88	1.89	.91	100
41	75.33	17.09	1.21	3.09	3.08	.20	100
42	73.96	11.97	2.07	5.17	6.21	.62	100
43	88.57	4.34	.46	1.38	5.18	.07	100
44	78.45	9.89	2.43	6.91	2.32	.....	100
45	73.03	14.87	6.10	2.23	3.77	.....	100
46	73.44	13.78	5.70	2.29	4.88	.....	100
47	68.81	20.37	5.44	1.94	3.37	.....	100
48	71.20	17.31	5.18	1.92	4.39	.....	100
49	73.32	14.40	6.19	2.26	3.83	.....	100
50	73.98	13.08	5.80	2.22	4.92	.....	100
51	74.96	12.64	6.30	2.20	3.90	.....	100
52	73.89	12.86	5.86	2.31	5.08	.....	100
53	71.41	15.35	.24	7.71	5.24	.05	100
54	79.38	14.46	.15	3.29	2.66	.06	100
55	83.37	4.93	.42	1.33	9.88	.07	100
56	60.27	13.84	.18	3.21	2.47	.03	100
57	77.18	7.52	.....	8.55	2.44	.....	100
58	90.42	4.46	.44	1.49	3.12	.07	100
59	83.78	6.42	.57	2.27	6.87	.09	100
60	68.81	22.54	1.01	3.40	4.26	.04	100
61	82.70	8.88	1.20	5.98	1.09	.15	100
62	78.07	10.20	.56	3.77	7.31	.09	100

**TABLE VII.—COST OF PRODUCTION OF MISCELLANEOUS STEEL
AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Continued.**

C.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS

[Establishments numbers 2 to 6, 12 to 17, 25 to 29, 35 to 42, 60, and 61 are in the United States, numbers 1, 7 to 11, 14 to 24, 30, 43 to 52, 53, 57 to 59, and 62 are on the continent of Europe; and numbers 11, 24, 25 to 28, 32, 54, and 56 are in Great Britain.]

[illegible]

• The world:

• Inc. selling interest and depreciation of value of plant

TABLE VII.—COST OF PRODUCTION OF MISCELLANEOUS STEEL AT VARIOUS ESTABLISHMENTS IN VARIOUS STATES—Concluded.

H.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 2 to 6, 12 to 17, 25 to 29, 35 to 41, 50, and 61 are in the United States; numbers 1, 7 to 10, 18 to 24, 30, 42 to 52, 53, 57 to 59, and 62 are on the continent of Europe and numbers 11, 24, 31 to 34, 53, 54, and 56 are in Great Britain.]

Establishment number.	Additional cost per ton.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1	(a)			(a)
2	\$0.031	\$0.554		\$0.585
3	.074	1.315		1.389
4	.075	1.316		1.391
5	.078	1.315		1.393
6	.032	.555		.587
7	(a)	(a)	(a)	(a)
8	(a)	(a)	(a)	(a)
9	(a)	(a)	(a)	(a)
10	.011	(a)	(a)	\$0.011
11	(a)	(a)	(a)	(a)
12	.011	.241		.252
13	.031	.553		.584
14	.031	.553		.584
15	.032	.555		.587
16				
17				
18	(a)	(a)	(a)	(a)
19	.006	(a)	(a)	\$0.006
20	(a)			(a)
21	(a)			(a)
22	(a)			(a)
23	(a)			(a)
24	(a)	(a)	(a)	(a)
25	.010	.340		.350
26				
27		.104		.104
28				
29	.018		\$0.273	.291
30	(a)	(a)	(a)	(a)
31				
32		(a)	(a)	(a)
33		(a)	(a)	(a)
34		(a)	(a)	(a)
35	.112	(a)	(a)	\$0.112
36	.072	1.257		1.329
37	.077	1.262		1.339
38	.076	1.264		1.340
39	.032	.554		.586
40	.077	1.263		1.340
41	.032	1.220		1.252
42	.150			.150
43	.006	(a)	(a)	\$0.006
44	(a)	(a)	(a)	(a)
45	(a)	(a)	(a)	(a)
46	(a)	(a)	(a)	(a)
47	(a)			(a)
48	(a)			(a)
49	(a)			(a)
50	(a)			(a)
51	(a)			(a)
52	(a)			(a)
53	.002	(a)	(a)	\$0.002
54		(a)	(a)	(a)
55	.006	(a)	(a)	\$0.006
56				
57	(a)	(a)	(a)	(a)
58	.006	(a)	(a)	\$0.006
59	.010	(a)	(a)	\$0.010
60	.041		.679	.720
61	.038		.733	.771
62	.010	(a)	(a)	\$0.010

a Not reported.

b Not including interest and depreciation of value of plant.



BITUMINOUS COAL.



BITUMINOUS COAL.

The titles of table VIII and its sub-tables are as follows:

TABLE VIII.—*Cost of Production of Bituminous Coal at Various Mines in Various States.*

- A.—Period covered and description of mine.
- B.—The miner and the product.
- C.—Chemical analysis of coal (per cent.)
- D.—General statement of cost for the period.
- E.—Elements of cost in one ton of 2,000 pounds.
- F.—Per cent. of each element of cost in one ton of 2,000 pounds.
- G.—Additional cost of certain theoretical elements.
- H.—Additional cost of certain theoretical elements in one ton of 2,000 pounds.

In sub-table A, under the heading kind of mine, the answers shaft, slope, or drift have been inserted. These answers, together with those giving the depth of shaft, distance from surface to working point, and thickness of vein, will indicate in some degree the relative difficulties of mining in the different establishments.

In sub-table B are shown the amounts paid out by the miner for tool sharpening, oil, gunpowder, and other purposes. These items are necessary to be considered in comparing the labor cost of mining in different mines. In some cases (particularly in foreign countries) these expenses are borne by the establishment, and would be charged under supplies, but the general rule in this country seems to be to pay a gross sum per ton to the miner, out of which he shall pay, or suffer a deduction for, these charges, so that the labor cost of mining in such cases represents the amount paid for labor and for such supplies, and would not be comparative with the cost in an establishment which furnishes these things. In this respect coal mining seems to differ from ore mining or limestone quarrying, in which the powder, etc., are very generally, if not always, furnished by the establishment. In this same table are also shown the number of tons of coal mined per miner per week, and the price paid per ton for tons of the size used as a measure at each particular mine, as well as the output per miner per week in tons of the uniform size of 2,000 pounds.

Sub-table C shows the chemical analysis of the coal as reported by the establishment. As will be apparent upon examination these analyses were not all made upon the same basis, some being made before and some after evaporation of the moisture.

In and tables D and E, relating to the cost of the product, it will be noticed that there is a column headed value of screenings which is used as a credit against total cost. This is applicable only in mines producing lump coal, and shows (D) the estimated total value and E the estimated value per ton of product of the fine coal which passes through the screens and for which the miner receives no pay. As this coal has a value it is manifestly proper to credit it against cost. Of course, strictly speaking, this credit for screenings should be distributed proportionally among the various elements of cost, but it was impossible to do this and at the same time preserve the actual conditions as to payment of miners, etc., under which the operations of the mines were conducted. In these same tables the reader will not fail to notice considerable variations in the costs of coal apparently mined in the same locality and, so far as the tables show, under practically the same conditions. The explanation for these differences in such cases may be partially in the varying economy of administration, but is doubtless chiefly due to natural advantages or disadvantages which do not find full representation in the reports received; the amount of slate in the vein of coal, character of the roof, the conditions as to moisture and other local circumstances have effect in determining the amount of production and the consequent cost.

In table F, showing the per cent. of each element of cost in total cost, it will be noticed that the column of deductions for value of screenings has been neglected and that the percentages are based on the gross cost per ton. This was done because the details would otherwise show more than 100 per cent., followed by a reduction to 100 per cent. on account of the credit for screenings, whereas if it were possible to have properly divided the credit for screenings among the several elements, their relative amounts could scarcely have been disturbed.

Tables G and H, relating to insurance, interest, depreciation of the value of the plant, and royalty to the owners of the soil are also fragmentary. The remarks made as to this class of items in the preceding paragraph in the pig iron tables are applicable here.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES.

A.—PERIOD COVERED AND DESCRIPTION OF MINE.

Establishment number.	Locality.	Period covered.		Kind of mine.	Depth of shaft (feet).	From surface to working point (feet).	Thickness of vein (inches).	Size of screen (inches).
		Terminal dates.	Days of running time.					
1	United States.	Sept. 1, 1888, to Aug. 31, 1889	312	Shaft	(a)	2,500	50	None used.
2	do	Jan. 1, 1889, to Dec. 31, 1889	312	Shaft	(b)	(c)	84	2 1/2
3	do	Jan. 1, 1889, to Dec. 31, 1889	306	(d)	375	(e)	(f)	None used.
4	do	Feb. 1, 1889, to Jan. 31, 1890	301	Drift	(g)	(h)	(i)	2
5	do	Feb. 1, 1889, to Jan. 31, 1890	(A)	(d)	75	(j)	64	None used.
6	do	Jan. 1, 1890, to Jan. 31, 1890	24	Shaft	75	1,000	30	None used.
7	do	May 1, 1889, to Apr. 30, 1890	190	Shaft	480	1,427	30	None used.
8	do	May 1, 1889, to Apr. 30, 1890	181	Shaft	480	2,040	47	
9	do	May 1, 1889, to Apr. 30, 1890	206	Shaft	100	1,427	35	
10	do	July 1, 1889, to June 30, 1890	184	Shaft	145	1,700	78	None used.
11	do	Jan. 1, 1890, to Dec. 31, 1890	340	Shaft	470	2,540	42	
12	do	Jan. 1, 1889, to Dec. 31, 1889	302	Shaft	114	900	75	None used.
13	do	Jan. 1, 1889, to Dec. 31, 1889	156	Shaft	245	1,220	72	
14	do	Jan. 1, 1889, to Dec. 31, 1889	192	Shaft	240	2,500	94	
15	do	Jan. 1, 1889, to Dec. 31, 1889	348	Shaft	210	1,427	72	
16	do	Jan. 1, 1889, to Dec. 31, 1889	312	Shaft	250	2,300	72	
17	do	July 1, 1889, to Dec. 31, 1889	100	Shaft	205	(k)	72	
18	do	July 1, 1889, to Dec. 31, 1889	131	Shaft	312	1,520	48	
19	do	Oct. 1, 1889, to Oct. 31, 1889	32	Shaft	115	1,497	35	
20	do	Oct. 1, 1889, to Oct. 31, 1889	20	Shaft	50	1,220	38	
21	do	Nov. 1, 1889, to Nov. 30, 1889	18	Shaft	400	1,427	42	
22	do	Nov. 1, 1889, to Nov. 30, 1889	15	Shaft	100	1,427	38	
23	do	Nov. 1, 1889, to Nov. 30, 1889	20	Shaft	400	2,040	42	
24	do	Nov. 1, 1889, to Nov. 30, 1889	17	Shaft	100	2,000	57	
25	do	May 1, 1889, to Apr. 30, 1889	131	Shaft	85	1,320	90	
26	do	May 1, 1889, to Apr. 30, 1889	177	Shaft	84	1,000	60	None used.
27	do	Jan. 1, 1889, to Dec. 31, 1889	300	Shaft	85	900	54	
28	do	Jan. 1, 1889, to Dec. 31, 1889	200	Shaft	84	2,000	72	
29	do	Jan. 1, 1889, to Dec. 31, 1889	153	Shaft	25	900	78	
30	do	Jan. 1, 1889, to Dec. 31, 1889	101	Shaft	30	900	66	
31	do	Jan. 1, 1889, to Dec. 31, 1889	118	Shaft	230	900	72	
32	do	Jan. 1, 1889, to Dec. 31, 1889	157	Shaft	85	1,320	90	
33	do	Aug. 7, 1889, to Dec. 31, 1889	87	Shaft	85	100	100	
34	do	Sept. 1, 1889, to Dec. 31, 1889	92	Shaft	75	450	78	
35	do	Jan. 1, 1889, to Dec. 31, 1889	220	Slope		4,000	120	None used.
36	do	Jan. 1, 1889, to Dec. 31, 1889	180	Slope		1,000	168	None used.
37	do	Jan. 1, 1889, to Dec. 31, 1889	200	Slope		1,320	120	None used.
38	do	Dec. 1, 1889, to Dec. 31, 1889	20	Slope		5,000	120	None used.
39	do	Dec. 1, 1889, to Dec. 31, 1889	22	Slope		3,000	120	None used.
40	do	July 1, 1889, to June 30, 1890	103	Shaft	140	2,000	90	
41	do	Jan. 1, 1889, to Sept. 30, 1889	156	Shaft	170	2,040	72	
42	do	Jan. 1, 1889, to Oct. 31, 1889	190	Drift		1,200	48	
43	do	Jan. 1, 1889, to Dec. 31, 1889	140	Shaft	80	2,040	102	
44	do	Jan. 1, 1889, to Dec. 31, 1889	144	Drift		2,000	48	
45	do	Jan. 1, 1889, to Dec. 31, 1889	149	Shaft	80	120	66	
46	do	Jan. 1, 1889, to Dec. 31, 1889	150	Shaft	(l)	(m)	(n)	
47	do	Jan. 1, 1889, to Dec. 31, 1889	150	Shaft	100	3,200	(o)	
48	do	Jan. 1, 1889, to Dec. 31, 1889	133	Shaft	83	2,040	81	
49	do	Jan. 1, 1889, to Dec. 31, 1889	154	Shaft	45	1,320	60	
50	do	Jan. 1, 1889, to Dec. 31, 1889	158	Drift		1,500	26	
51	do	Jan. 1, 1889, to Dec. 31, 1889	163	Drift		3,000	72	
52	do	Jan. 1, 1889, to Dec. 31, 1889	164	Shaft	132	900	48	
53	do	Jan. 1, 1889, to Dec. 31, 1889	166	Shaft	70	2,000	48	
54	do	Jan. 1, 1889, to Dec. 31, 1889	174	Shaft	80	3,500	64	
55	do	Jan. 1, 1889, to Dec. 31, 1889	175	Drift		2,000	54	
56	do	Jan. 1, 1889, to Dec. 31, 1889	171	Shaft	(p)	1,400	66	
57	do	Jan. 1, 1889, to Dec. 31, 1889	180	Shaft	90	1,500	100	
58	do	Jan. 1, 1889, to Dec. 31, 1889	180	Shaft	170	2,500	(q)	
59	do	Jan. 1, 1889, to Dec. 31, 1889	180	Shaft	90	1,950	(r)	
60	do	Jan. 1, 1889, to Dec. 31, 1889	181	Shaft	137	1,057	48	
61	do	Jan. 1, 1889, to Dec. 31, 1889	186	Drift		3,000	60	
62	do	Jan. 1, 1889, to Dec. 31, 1889	208	Shaft	125	(s)	48	
63	do	Jan. 1, 1889, to Dec. 31, 1889	212	Drift		4,000	48	

a From 400 to 500 feet.

b From 200 to 300 feet.

c Not reported.

d Slope and shaft.

e In slope, 2,000 feet; in shaft, not reported.

f 36 and 72 inches.

g From 34 to 48 inches.

h Vary in different mines, ranging from 250 to 308 days.

i From 100 to 350 feet.

j From 1,000 to 4,000 feet.

k From 1,500 to 2,000 feet.

l From 80 to 250 feet.

m From 2,000 to 3,000 feet.

n From 72 to 90 inches.

o From 48 to 72 inches.

p From 20 to 150 feet.

q From 30 to 60 inches.

r From 48 to 54 inches.

s From 175 to 725 feet.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

A.—PERIOD COVERED AND DESCRIPTION OF MINE—Continued.

Establishment number.	Locality.	Period covered.		Kind of mine.	Depth of shaft (feet).	From surface to working point (feet).	Thickness of vein (inches).	Size of screen (inches).
		Terminal dates.	Days of running time.					
64	United States.	Jan. 1, 1889, to Dec. 31, 1889	218	Drift	.....	3,900	72	1½
65	do	Jan. 1, 1889, to Dec. 31, 1889	226	Drift	.....	5,400	56	1½
66	do	Jan. 1, 1889, to Dec. 31, 1889	220	Shaft	120	2,700	60	1½
67	do	Jan. 1, 1889, to Dec. 31, 1889	234	Shaft	135	1,800	72	1½
68	do	Jan. 1, 1889, to Dec. 31, 1889	240	Drift	.....	1,500	48	1½
69	do	Jan. 1, 1889, to Dec. 31, 1889	250	Shaft	110	3,500	60	1½
70	do	Jan. 1, 1889, to Dec. 31, 1889	251	Drift	.....	1,200	57	1½
71	do	Jan. 1, 1889, to Dec. 31, 1889	253	Shaft	65	2,500	48	1½
72	do	Jan. 1, 1889, to Dec. 31, 1889	280	Shaft	175	5,250	60	1½
73	do	Jan. 1, 1889, to Dec. 31, 1889	282	Drift	.....	(a)	42	1½
74	do	Jan. 1, 1889, to Dec. 31, 1889	288	Shaft	140	2,840	(b)	1½
75	do	Jan. 1, 1889, to Dec. 31, 1889	290	Drift	.....	5,280	72	1½
76	do	Jan. 1, 1889, to Dec. 31, 1889	300	Drift	.....	(a)	48	1½
77	do	Jan. 1, 1889, to Dec. 31, 1889	(c)	Shaft	(d)	(e)	90	1½
78	do	Jan. 1, 1889, to Dec. 31, 1889	(e)	(f)	185	(g)	(h)	1½
79	do	Apr. 1, 1889, to Mar. 31, 1890	294	Drift	.....	6,020	(i)	1½
80	do	Apr. 1, 1889, to Mar. 31, 1890	114	Drift	.....	5,280	42	1½
81	do	July 1, 1889, to June 30, 1889	90	Drift	.....	7,920	54	1½
82	do	July 1, 1889, to June 30, 1889	100	Drift	.....	3,000	48	1½
83	do	July 1, 1889, to June 30, 1889	101	Drift	.....	10,560	54	1½
84	do	July 1, 1889, to June 30, 1889	120	Drift	.....	3,440	48	1½
85	do	July 1, 1889, to June 30, 1889	161	Drift	.....	2,440	48	1½
86	do	Oct. 1, 1889, to Sept. 30, 1889	240	Drift	.....	1,900	42	None used.
87	do	June 30, 1889, to Dec. 31, 1889	140	Slope	.....	1,900	48	None used.
88	do	Jan. 1, 1889, to Dec. 31, 1889	48	Shaft	120	1,390	63	1½
89	do	Jan. 1, 1889, to Dec. 31, 1889	170	Drift	.....	(a)	60	1½
90	do	Jan. 1, 1889, to Dec. 31, 1889	202	Drift	.....	2,500	60	None used.
91	do	Jan. 1, 1889, to Dec. 31, 1889	264	Shaft	50	1,500	54	1½
92	do	Jan. 1, 1889, to Dec. 31, 1889	325	Shaft	200	5,280	72	1½
93	do	Jan. 1, 1889, to Dec. 31, 1889	230	Drift	.....	4,590	54	(j)
94	do	Jan. 1, 1889, to Dec. 31, 1889	230	Slope	.....	2,640	60	None used.
95	do	Jan. 1, 1889, to Dec. 31, 1889	231	Shaft	65	5,000	48	None used.
96	do	Jan. 1, 1889, to Dec. 31, 1889	236	Drift	.....	2,000	52	1½
97	do	Jan. 1, 1889, to Dec. 31, 1889	236	Drift	.....	5,280	(k)	None used.
98	do	Jan. 1, 1889, to Dec. 31, 1889	239	Slope	.....	5,000	46	None used.
99	do	Jan. 1, 1889, to Dec. 31, 1889	250	Drift	.....	600	43	None used.
100	do	Jan. 1, 1889, to Dec. 31, 1889	250	Shaft	278	2,640	50	None used.
101	do	Jan. 1, 1889, to Dec. 31, 1889	250	Shaft	.....	5,000	.....	1½
102	do	Jan. 1, 1889, to Dec. 31, 1889	250	Drift	.....	6,280	50	1½
103	do	Jan. 1, 1889, to Dec. 31, 1889	250	Drift	.....	4,000	54	None used.
104	do	Jan. 1, 1889, to Dec. 31, 1889	252	Drift	.....	80	(l)	None used.
105	do	Jan. 1, 1889, to Dec. 31, 1889	258	Drift	.....	2,500	(m)	1½
106	do	Jan. 1, 1889, to Dec. 31, 1889	256	Slope	.....	3,800	60	1½
107	do	Jan. 1, 1889, to Dec. 31, 1889	266	Drift	.....	1,000	(n)	(j)
108	do	Jan. 1, 1889, to Dec. 31, 1889	262	Drift	.....	(e)	54	None used.
109	do	Jan. 1, 1889, to Dec. 31, 1889	270	Drift	.....	3,500	60	None used.
110	do	Jan. 1, 1889, to Dec. 31, 1889	288	Slope	.....	(a)	60	(a)
111	do	Jan. 1, 1889, to Dec. 31, 1889	300	Shaft	280	3,900	50	None used.
112	do	Jan. 1, 1889, to Dec. 31, 1889	300	Drift	.....	7,920	54	None used.
113	do	Jan. 1, 1889, to Dec. 31, 1889	300	Drift	.....	2,600	48	None used.
114	do	Jan. 1, 1889, to Dec. 31, 1889	300	Drift	.....	2,500	48	None used.
115	do	Jan. 1, 1889, to Dec. 31, 1889	300	Drift	.....	2,640	54	None used.
116	do	Jan. 1, 1889, to Dec. 31, 1889	70	Drift	.....	3,275	72	(p)
117	do	Jan. 1, 1889, to Dec. 31, 1889	104	Drift	.....	3,960	72	1½
118	do	Jan. 1, 1889, to Dec. 31, 1889	111	Drift	.....	5,280	72	1½
119	do	Jan. 1, 1889, to Dec. 31, 1889	136	Drift	.....	4,800	60	1½
120	do	Jan. 1, 1889, to Dec. 31, 1889	136	Drift	.....	2,400	(q)	(i)
121	do	Jan. 1, 1889, to Dec. 31, 1889	175	Drift	.....	(a)	48	(j)
122	do	Jan. 1, 1889, to Dec. 31, 1889	180	Drift	.....	2,640	54	1½
123	do	Jan. 1, 1889, to Dec. 31, 1889	182	Drift	.....	3,980	58	(j)
124	do	Jan. 1, 1889, to Dec. 31, 1889	183	Drift	.....	(a)	108	1½
125	do	Jan. 1, 1889, to Dec. 31, 1889	199	Drift	.....	(a)	54	1½
126	do	Jan. 1, 1889, to Dec. 31, 1889	200	Drift	.....	1,200	48	None used.

a Not reported.

b From 24 to 36 inches.

c One mine 18, one 193, and one 207 days.

d One 20, two 60, and one 120 feet.

e One mine 42, one 108, and one 132 days.

f One shaft and two drifts.

g One mine 100, one 1,320, and one 2,616 feet.

h Two 42 inches each and one 78 inches.

i From 42 to 48 inches.

j 1½ and 2 inches.

k From 34 to 60 inches.

l From 54 to 60 inches.

m From 54 to 58 inches.

n From 42 to 72 inches.

o From 400 to 6,000 feet.

p 1½ and 2 inches.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

A.—PERIOD COVERED AND DESCRIPTION OF MINE—Concluded.

Estab- lish- ment num- ber.	Locality.	Period covered.		Kind of mine.	Depth of shaft (feet).	From sur- face to work- ing point (feet).	Thick- ness of vein (inch- es).	Size of screen (inches).	
		Terminal dates.	Days of run- ning time.						
127	United States.	Jan. 1, 1889, to Dec. 31, 1889	216	Drift	(a)	60			
128	do	Jan. 1, 1889, to Dec. 31, 1889	222	Drift	5,280	54			
129	do	Jan. 1, 1889, to Dec. 31, 1889	225	Drift	(a)	48	(b)		
130	do	Jan. 1, 1889, to Dec. 31, 1889	230	Drift	10,560	48			
131	do	Jan. 1, 1889, to Dec. 31, 1889	232	Drift	7,920	66			
132	do	Jan. 1, 1889, to Dec. 31, 1889	244	Drift	3,840	48			
133	do	Jan. 1, 1889, to Dec. 31, 1889	247	Drift	4,000	60	None used.		
134	do	Jan. 1, 1889, to Dec. 31, 1889	263	Drift	2,400	(c)	(b)		
135	do	Jan. 1, 1889, to Dec. 31, 1889	250	Drift	(a)	48			
136	do	Nov. 1, 1889, to Dec. 31, 1889	30	Drift	1,200	64			
137	do	Dec. 1, 1889, to Mar. 31, 1890	102	Slope	1,500	48	None used.		
138	do	Jan. 1, 1890, to Mar. 31, 1890	50	Drift	1,500	56	(b)		
139	do	Jan. 1, 1889, to Dec. 31, 1889	200	Drift	1,800	(c)	(b)		
140	do	Jan. 1, 1889, to Dec. 31, 1889	228	Drift	1,200	30	None used.		
141	do	Apr. 1, 1889, to Mar. 31, 1889	310	Drift	(a)	144	2		
142	do	Jan. 1, 1889, to Dec. 31, 1889	150	Drift	3,960	72			
143	do	Jan. 1, 1889, to Dec. 31, 1889	201	Drift	7,200	66			
144	do	Jan. 1, 1889, to Dec. 31, 1889	232	Slope	1,000	180	None used.		
145	do	Jan. 1, 1889, to Dec. 31, 1889	236	Drift	6,600	60	None used.		
146	do	Feb. 1, 1890, to Jan. 31, 1890	278	Drift	10,560	60	None used.		
147	Dominion of Canada.	Jan. 1, 1889, to Dec. 31, 1889	214	Slope	(a)	(a)			
148	do	Jan. 1, 1889, to Dec. 31, 1889	255	Slope	(a)	(a)			
149	do	Jan. 1, 1889, to Dec. 31, 1889	260	Slope	(a)	(a)			
150	do	Jan. 1, 1889, to Dec. 31, 1889	263	Slope	(a)	(a)			
151	do	Jan. 1, 1889, to Dec. 31, 1889	290	Slope	(a)	(a)			
152	Continent of Europe.	Jan. 1, 1889, to Dec. 31, 1889	301	Shaft	(d)	5,280	30	(c)	
153	do	Sept. 22, 1889, to Oct. 19, 1889	24	Shaft	1,112	(a)		None used.	
154	do	Sept. 22, 1889, to Oct. 19, 1889	34	Shaft	1,131	(a)		None used.	
155	do	Sept. 22, 1889, to Oct. 19, 1889	24	Shaft	1,815	(a)		None used.	
156	do	Jan. 18, 1890, to Apr. 15, 1890	75	Shaft	607	2,553	24	(e)	
157	do	Apr. 1, 1888, to Mar. 31, 1889	299	Shaft	(g)	(h)	(i)	(j)	
158	do	Apr. 1, 1888, to Mar. 31, 1889	299	Shaft	984	(k)	(l)	(m)	
159	do	Jan. 1, 1890, to Jan. 31, 1890	26	Shaft	(n)	(o)	(p)	None used.	
160	do	Oct. 1, 1889, to Dec. 31, 1889	78	Shaft	1,394	3,937	(y)	None used.	
161	Great Britain	Sept. 30, 1889, to Dec. 28, 1889	72	Shaft	(g)	5,280	(r)	1	
162	do	Sept. 30, 1889, to Dec. 28, 1889	73	Shaft	568	4,200	(s)	1	
163	do	Sept. 30, 1889, to Dec. 28, 1889	73	Shaft	402	6,000	(t)	1	
164	do	Sept. 30, 1889, to Dec. 28, 1889	73	Shaft	(u)	(v)	(w)	1	
165	do	Jan. 1, 1889, to June 29, 1889	141	Shaft	(w)	(x)	(y)	1½	
166	do	Jan. 1, 1889, to Dec. 31, 1889	256	Shaft	(x)	(a)	(aa)	(bb)	
167	do	July 1, 1889, to Dec. 31, 1889	135	Shaft	1,036	5,016	(cc)	(dd)	
168	do	Aug. 1, 1889, to Jan. 31, 1890	139	Shaft	234	0,240		(ff)	
169	do	Aug. 1, 1889, to Jan. 31, 1890	146	Shaft	234	0,240		(bb)	
170	do	Aug. 1, 1889, to Jan. 31, 1890	149	Shaft	1,260	10,560	72	(ff)	
171	do	Aug. 1, 1889, to Jan. 31, 1890	156	Shaft	1,011	10,560	96	(yy)	
172	do	Mar. 1, 1890, to Mar. 31, 1890	24	Shaft	300	5,940	96	(aa)	
173	do	Jan. 1, 1889, to Dec. 31, 1889	292	Shaft	(ii)	(jj)	(kk)	1	

a Not reported.

b 1½ and 1 inch.

c From 48 to 60 inches.

d One 407, one 673, one 1,050, and one 1,778 feet.

e 47 and 1.77 inch.

f From 20 to 79 inches.

g 623 and 771 feet.

h From 3,404 to 4,052 feet.

i Four veins: 78, 138, 157, and 236 inches, respec-
tively.

j Six sizes: from 0.39 to 3.94 inches.

k 3,445 and 4,285 feet.

l 126 and 315 inches.

m Too varied to enumerate.

n Twelve shafts: from 984 to 1,591 feet.

o From 36 to 95 inches.

p Twenty-five veins: from 28 to 67 inches.

q 450 and 600 feet.

r Four veins: from 36 to 66 inches.

s Three veins: from 23 to 66 inches.

t Three veins: from 24 to 66 inches.

u 174, 246, and 378 feet.

v 2,000, 6,000, and 7,920 feet.

w From 300 to 1,140 feet.

x From 1,300 to 18,200 feet.

y From 36 to 78 inches.

z Four shafts: 435, 510, 735, and 1,283 feet, re-
spectively.

aa From 30 to 84 inches.

bb 1, 1½, and 1 inch.

cc One 33 and one 45 inches.

dd From 1 to 1 inch.

ee Machines are occasionally used in these mines.

ff 1, 1½, and 1 inch.

gg 1, 1½, and 1 inch.

hh 1 inch, and upwards.

ii From 300 to 1,746 feet.

jj From 350 to 3,000 feet.

kk From 30 to 90 inches.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

B.—THE MINER AND THE PRODUCT.

[Establishments numbers 1 to 144 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 172 are in Great Britain.]

Estab- lish- ment num- ber.	Amount paid by miner per week for—				Benef- it of miner per week from free fuel.	Actual conditions of mining.				Coal mined (tons of 2,000 pounds).		
	Smith- ing.	Oil.	Gun- pow- der.	Other pur- poses.		Description of coal.	Tons mined per miner per week.	Size of ton (pounds)	Pay of miner per ton.	Check- weigh- men em- ployed.	Total.	Per miner per week.
1	\$0.125	\$0.200	\$1.650	\$0.230	\$0.000	Run of mine.	22.0	2,000	\$0.475	Yes.	122.042	22.0
2	.130	.350	1.750			Run of mine.	40.0	2,000	.450	No.	41.297	40.0
3		.375	2.250	.125		Run of mine.	26.2	2,000	(a)	Yes.	502.000	26.2
4	.200	.400	.550			Run of mine.	18.0	2,000	(b)	Yes.	445.223	18.0
5	(c)	.500	(d)		(e)	Run of mine.	26.8	2,000	(f)	Yes.	1,008.300	26.8
6	.125	.200	1.800			Run of mine.	15.0	2,000	.700	No.	4.300	15.0
7	.100	.250			(g)	Lump.	14.6	2,000	.900	Yes.	110.792	14.6
8	.100	.250			(g)	Lump.	12.8	2,000	.900	Yes.	102.774	12.8
9	.120	.350			(g)	Lump.	12.2	2,000	.950	Yes.	147.199	12.2
10	(h)	(A)			(i)	Run of mine.	(A)	2,000	(A)	No.	219.704	(A)
11	.075	.250			(g)	Lump.	15.0	2,000	.725	Yes.	120.164	15.0
12	(A)	(A)			(g)	Run of mine.	(A)	2,000	(A)	No.	60.790	(A)
13	.250	.300	2.200		(g)	Lump.	24.0	2,000	.600	Yes.	58.764	24.0
14	.200	.300	1.950		(g)	Lump.	26.0	2,800	.500	No.	87.353	26.0
15	.250	.280	2.200		(g)	Lump.	24.0	2,800	.625	Yes.	67.008	24.0
16	.300	.250	2.200		(g)	Lump.	24.0	2,800	.600	Yes.	51.070	24.0
17	.250	.300	2.200		(g)	Lump.	24.0	2,800	.600	Yes.	29.767	24.0
18	.180	.380			(h)	Lump.	18.0	2,000	.700	Yes.	28.394	18.0
19	.080	.250			(h)	Lump.	12.0	2,000	.875	Yes.	30.372	12.0
20	.080	.250			(h)	Lump.	19.2	2,000	.875	Yes.	29.840	19.2
21	.110	.250			(g)	Lump.	14.0	2,000	.825	Yes.	10.580	14.0
22	.120	.250			(g)	Lump.	12.4	2,000	.875	Yes.	11.678	12.4
23	.100	.250			(g)	Lump.	12.0	2,000	.825	Yes.	11.070	12.0
24	.180	.250	.375		m 125	Lump.	16.0	2,000	.725	Yes.	41.298	16.0
25	.180	.300	.600		(i)	Lump.	16.0	2,000	.725	Yes.	81.260	16.0
26	(A)	(A)			(i)	Run of mine.	(A)	2,000	(A)	No.	37.086	(A)
27	n .200	n .200	n 1.800		(i)	Lump.	n 44.0	2,000	n .310	Yes.	96.100	n 44.0
28	e .250	e .200	e 1.050		(p)	Lump.	e 21.0	2,000	e .675	Yes.	108.451	e 21.0
29	.250	.200	.600		(i)	Lump.	18.0	2,000	.675	Yes.	34.678	18.0
30	e .200	e .200	e .530		(i)	Lump.	e 20.0	2,800	e .700	Yes.	100.600	e 20.0
31	n .200	n .200			(i)	Lump.	n 60.0	2,000	n .200	No.	18.580	n 60.0
32	.180	.200	.580		(g)	Lump.	12.0	2,000	.750	Yes.	61.000	12.0
33	.200	.300	2.150		(g)	Lump.	20.0	2,000	.750	Yes.	11.068	20.0
34	.250	.200	.800		(g)	Lump.	18.0	2,000	.675	Yes.	7.014	18.0
35	.287	.250			(i)	Run of mine.	28.7	2,240	q .500	No.	358.665	28.7
36	.280	.250			(i)	Run of mine.	28.0	2,240	q .500	No.	30.457	28.0
37	.293	.250			(i)	Run of mine.	29.3	2,240	q .500	No.	305.015	29.3
38	.283	.250			(r)	Run of mine.	28.3	2,240	q .500	No.	29.792	28.3
39	.290	.250			(i)	Run of mine.	28.0	2,240	q .500	No.	24.600	28.0
40	.110	.200	.700			Lump.	11.0	2,000	.760	Yes.	27.960	11.0
41	.120	.200	1.940			Lump.	13.4	2,000	.821	No.	13.335	13.4
42	.600	.150	.500			Lump.	16.5	2,000	.650	Yes.	21.092	16.5
43	.150	.350	.750			Lump.	22.0	2,000	.650	Yes.	90.521	22.0
44	.250	.200	1.125			Lump.	18.5	2,000	.650	No.	21.200	18.5
45	.180	.210	.480		e .150	Lump.	14.5	2,000	.650	No.	33.652	14.5
46	n .220	n .200	n .650			Lump.	n 38.0	2,000	n .338	Yes.	120.500	n 38.0
47	.150	.230	.740	t .300		Lump.	15.0	2,000	.790	Yes.	46.177	15.0
48	.150	.200	.600	t .120		Lump.	14.8	2,000	.800	Yes.	90.701	14.8
49	.160	.090	.650			Lump.	18.2	2,000	.650	No.	14.644	18.2
50	.100	.140	.850		e .400	Lump.	12.0	2,000	.650	Yes.	32.000	12.0
51	.140	.300	.870			Lump.	20.31	2,000	.650	No.	32.000	20.3

a 47.5 cents in 72-inch seam and 67.5 in 36-inch seam.

b From 45 to 55 cents.

c From 18 to 25 cents.

d From \$1.25 to \$2.

e Miners' families pick up coal for use.

f From 48 to 47.5 cents.

g Pays \$1.50 per ton at dump.

h No hand miners employed.

i Pays \$1.25 per ton at dump.

j Pays \$1.50 per ton delivered at his house.

k Pays \$1.60 per ton at dump.

l Pays \$1.35 per ton at dump.

m One-half ton of slack coal.

n Loaders (machine mine).

o Relates to hand mining only; mostly machine work.

p Pays \$1 per ton at dump.

q When cutting headings miner gets 60 cents per ton.

r Pays \$1.30 per ton at dump.

s One fourth ton.

t For checkweighman.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

B.—THE MINER AND THE PRODUCT—Continued.

[Establishments numbers 1 to 145 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain.]

Estab- lish- ment num- ber.	Amount paid by miner per week for—				Benef- it of miner per week from free fuel.	Actual conditions of mining.				Coal mined (tons of 2,000 pounds).		
	Smith- ing.	Oil.	Gun- pow- der.	Other pur- poses.		Description of coal.	Tons mined per miner per week.	Size of ton (pounds).	Pay of miner per ton.	Check weigh- man em- ployed.	Total.	Per miner per week.
52						Lump.....	(a)	2,000	(a)	No..	8,200	(a)
53	\$0.100	\$0.150	\$0.750	\$0.000	\$0.300	Lump.....	15.2	2,000	\$0.650	Yes..	34,428	15.2
54	.160	.230	1.270	.....	.....	Lump.....	18.7	2,000	.625	Yes..	70,355	18.7
55	.150	.100	.500	.....	.....	Lump.....	21.0	2,000	.650	No..	20,000	21.0
56	.170	.210	(c)	(d)	.....	Lump.....	12.8	2,000	.650	Yes..	34,221	12.8
57	.190	.190	.870	e 110	.....	Lump.....	19.3	2,000	.650	Yes..	65,000	19.3
58	.172	.220	1.120	(d)	.....	Lump.....	17.2	2,000	.600	Yes..	95,500	17.2
59	.150	.450	1.300	s 500	.....	Lump.....	14.3	2,000	.660	Yes..	17,500	14.3
60	.120	.050	1.220	.....	.....	Lump.....	12.0	2,000	.600	Yes..	44,424	12.0
61	.260	.240	.550	.....	.....	Lump.....	18.3	2,000	.630	No..	25,500	18.3
62	.160	.190	.230	.....	f .100	Lump.....	11.0	2,000	.610	No..	14,482	11.0
63	.188	.250	.750	.....	.....	Lump.....	22.0	2,000	.650	No..	47,372	22.0
64	.210	.190	.600	.....	.....	Lump.....	19.6	2,000	.650	Yes..	70,850	19.6
65	.210	.190	.300	.....	.....	Lump.....	14.0	2,000	.660	Yes..	71,100	14.0
66	.150	.150	.890	.....	.....	Lump.....	15.0	2,000	.635	No..	82,048	15.0
67	(a)	(a)	(a)	.....	.....	Lump.....	(a)	2,000	(a)	Yes..	103,650	(a)
68	.125	.150	.500	.....	.....	Lump.....	28.0	2,000	.650	Yes..	27,652	28.0
69	.150	.300	.250	.....	(g)	Lump.....	17.0	2,000	.650	No..	50,020	17.0
70	(c)	.140	.510	.....	.....	Lump.....	12.5	2,000	.650	Yes..	22,458	12.5
71	.250	.200	1.150	.....	.....	Lump.....	16.0	2,000	.680	No..	42,398	16.0
72	.210	.400	.500	.....	h .127	Lump.....	12.0	2,000	.608	No..	31,160	12.0
73	.110	.130	.490	.....	.....	Lump.....	8.0	2,000	.750	No..	9,286	8.0
74	.170	.180	.580	.....	.....	Lump.....	13.7	2,000	.790	No..	25,210	13.7
75	i .190	i .180	i .750	.....	.....	Lump.....	i 23.0	2,000	i .650	Yes..	332,092	i 23.0
76	.180	.200	.500	.....	.500	Run of mine	22.6	2,000	.500	Yes..	68,000	22.6
77	.130	.200	.620	.....	.....	Lump.....	20.1	2,000	.688	Yes..	428,385	20.1
78	(f)	.208	(k)	.100	.....	Lump.....	114.2	2,000	.650	Yes..	21,750	114.2
79	.125	.100	.850	.....	.120	Lump.....	14.7	2,000	.675	No..	50,640	14.7
80	.190	.190	.870	a .190	.....	Lump.....	19.2	2,000	.850	Yes..	27,263	19.2
81	.140	.150	.320	.....	(m)	Lump.....	20.0	2,000	.790	Yes..	58,084	20.0
82	.150	.150	.350	.....	.....	Lump.....	20.0	2,000	.780	Yes..	72,353	20.0
83	.150	.150	.350	.....	.....	Lump.....	21.0	2,000	.790	Yes..	65,123	21.0
84	.210	(j)	.400	.....	.....	Lump.....	19.0	2,000	.790	Yes..	78,402	19.0
85	.210	.150	.400	.....	.....	Lump.....	18.0	2,000	.790	Yes..	98,846	18.0
86	.200	.300	2.000	.....	.....	Run of mine	25.4	2,240	.500	Yes..	275,558	25.4
87	.250	.400	.660	.....	.250	Run of mine	20.0	2,240	.500	Yes..	6,783	20.0
88	.250	.320	.250	.....	.....	Lump.....	18.8	2,000	.790	Yes..	12,232	18.8
89	.300	.350	.400	.....	.....	Lump.....	18.0	2,000	.730	Yes..	18,978	18.0
90	.125	.150	.500	.....	.250	Run of mine	24.0	2,240	.500	Yes..	80,867	24.0
91	.140	.270	.120	.....	.....	Lump.....	14.0	2,000	.738	Yes..	23,574	14.0
92	.190	(c)	.....	.....	.....	Run of mine	20.0	2,000	.600	Yes..	192,294	20.0
93	.180	.250	.100	.....	.....	Lump.....	12.0	2,000	.790	Yes..	43,332	12.0
94	.150	.200	.300	.....	.....	Run of mine	20.0	2,240	.500	Yes..	80,983	20.0
95	.125	.150	(e)	.....	.....	Run of mine	19.0	2,240	(n)	Yes..	68,234	19.0
96	.173	.150	.100	.....	.....	Lump.....	18.0	2,000	(n)	Yes..	69,312	18.0
97	.150	.200	.300	.....	.....	Run of mine	22.0	2,000	.450	No..	169,232	22.0
98	.125	.150	(c)	.....	.....	Run of mine	17.0	2,240	.500	Yes..	80,327	17.0
99	.125	(c)	(c)	.....	.....	Run of mine	18.0	2,240	.500	Yes..	53,984	18.0
100	.125	.300	2.000	.....	(p)	Run of mine	24.0	2,000	.450	Yes..	80,720	24.0

a No hand miners employed.

b One-fourth ton.

c Not reported.

d Pays checkweighman; amount not reported.

e For checkweighman.

f One-fourth ton nut coal.

g Allowed a discount of 20 cents per ton from sale price.

h 218 pounds nut coal to each family.

i Relates to hand mining only, mostly machine work.

j One cent per ton, amounting in one mine to 13, in one to 14, and in one to 18 cents.

k Four cents per ton, amounting in one mine to 52, in one to 54, and in one to 72 cents.

l One mine 13 1/2, one 14, and one 18 tons.

m Coal furnished at cost price.

n Miners' rates vary.

o Allowed all the coal he needs free.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

B.—THE MINER AND THE PRODUCT—Continued.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 156 are on the continent of Europe; and numbers 157 to 172 are in Great Britain.]

Estab- lishment number.	Amount paid by miner per week for—				Benef- it of miner per week from free fuel.	Actual conditions of mining.				Coal mined (tons of 2,000 pounds).		
	Smith- ing.	Oil.	Gun- pow- der.	Other pur- poses.		Description of coal.	Tons mined per miner per week.	Size of ton (pounds).	Pay of miner per ton.	Check weigh- men em- ployed.	Total.	Per miner per week.
101	\$0.150	\$0.310	\$0.100	\$0.000	\$0.030	Lump	12.0	2,000	\$0.735	Yes	75,000	12.0
102	.140	.250	.100			Lump	15.0	2,000	.790	Yes	60,900	15.0
103	.250	.400	.500		.250	Run of mine.	23.0	2,240	.500	No	61,014	23.0
104	.100	.150	.500		.111	Run of mine.	20.0	2,240	.500	Yes	50,340	20.0
105	.125	.180	.530		.333	Run of mine.	30.0	2,000	.440	Yes	516,427	30.0
106	.125	.180	.530		.333	Run of mine.	23.8	2,000	.450	Yes	229,510	23.8
107	.105	.350	.200			Lump	14.5	2,000	(b)	Yes	42,507	14.5
108	.125	.150	(c)			Run of mine.	22.2	2,240	.500	Yes	185,742	22.2
109	.125	.150	(d)			Run of mine.	20.0	2,000	.420	Yes	253,173	20.0
110	.125	.150	(e)		.333	Run of mine.	19.0	2,240	.483	Yes	193,809	19.0
111	.125	.300	2.000		(d)	Run of mine.	24.0	2,000	.450	Yes	60,290	24.0
112	.170	.100	.250			Run of mine.	23.0	2,240	.500	Yes	102,767	23.0
113	.150	.200	.800		.250	Run of mine.	16.6	2,240	.504	Yes	37,601	17.9
114	.200	.300	.500		.250	Run of mine.	24.0	2,240	.500	Yes	31,029	24.0
115	.150	.150	.220			Run of mine.	24.0	2,240	.500	Yes	38,152	24.0
116	.180	(e)	(c)			Lump	19.0	2,000	.790	Yes	28,637	19.0
117	.180	.170	.250			Lump	11.9	2,000	.790	Yes	40,512	11.9
118	.160	.340	.500			Lump	18.0	2,000	.790	No	31,036	18.0
119	.190	.180	.100			Lump	15.0	2,000	.730	Yes	60,823	15.0
120	(e)	(c)	(c)			Lump	13.0	2,000	.730	Yes	28,047	13.0
121	.233	.250	.150			Lump	14.0	2,000	.790	Yes	34,708	14.0
122	.100	.220	.200			Lump	12.0	2,000	.790	Yes	44,854	12.0
123	.170	.200	(c)			Lump	12.2	2,000	.730	Yes	14,231	12.2
124	.160	.250	.200			Lump	13.0	2,000	.630	Yes	33,332	13.0
125	.175	.350				Lump	13.0	2,000	.730	Yes	117,245	13.0
126	.200	.130	.250	e. 0.50		Run of mine.	21.0	2,240	.450	Yes	9,968	21.0
127	.240	(f)	.250	g. 2.40		Lump	18.0	2,000	.730	Yes	57,100	18.0
128	.110	(e)	.200			Lump	14.0	2,000	.790	Yes	128,900	14.0
129	.250	.250	.150			Lump	16.0	2,000	.730	Yes	24,827	16.0
130	.100	.300				Lump	11.2	2,000	.730	Yes	25,671	11.2
131	.250	.300				Lump	(h)	2,000	.700	Yes	62,450	(h)
132	.160	.250	.150			Lump	11.3	2,000	.730	Yes	50,030	11.3
133	.150	.400	(c)	e. 0.50		Run of mine.	24.0	2,000	.450	Yes	50,592	24.0
134	.100	.300	.200		.250	Lump	(e)	2,000	.740	Yes	90,280	(e)
135	.200	.200	.220		(d)	Lump	12.7	2,000	.730	Yes	15,810	12.7
136		.150	.500			Lump	30.0	2,000	.630	No	5,536	30.0
137	.125	.150	.500			Run of mine.	24.0	2,240	.500	Yes	26,288	24.0
138	.200	.250	.250			Lump	11.3	2,000	.730	Yes	4,143	11.3
139	.150	.300	.150		.250	Lump	15.0	2,000	(b)	Yes	72,370	15.0
140	.250	.250				Run of mine.	18.0	2,000	.700	No	64,454	18.0
141	.250	.125	(e)	.050	.250	Run of mine.	36.0	2,240	.373	No	763,026	36.0
142	.200	.140	.720			Run of mine.	24.0	2,000	.500	Yes	35,500	24.0
143	(f)	.300	.400			Run of mine.	26.7	2,000	.500	No	5,355	26.7
144	.300	.350			(k)	Run of mine.	30.0	2,240	.500	No	393,781	30.0
145	(f)	.210	.630			Run of mine.	21.3	2,000	.500	No	30,720	21.3
146	(j)	.150	.250			Run of mine.	18.0	2,000	.500	No	14,338	18.0
147			.910		(l)	Run of mine.	21.9	2,240	.533	No	(e)	21.9
148					(i)	Run of mine.	29.0	2,240	.450	No	(e)	29.0
149		.575	.225	.310	(m)	Run of mine.	27.4	2,240	.523	No	(e)	27.4
150					(n)	Run of mine.	25.0	2,240	.405	No	(e)	25.0
151		.180	1.020	.070		Run of mine.	20.0	2,240	.665	Yes	(e)	20.0
152	(f)		(o)		p. 0.77	Run of mine.	30.1	2,205	.164	Yes	240,030	30.1

Allowed a discount of 20 cents per ton from sale prices.

Miners' rates vary.

Not reported.

Allowed all the coal he needs free.

Cotton quilts.

From 20 to 25 cents.

For checkweighman.

From 20 to 25 tons.

Relates to hand mining only; mostly machine work.

Miners do their own smithing.

Pays \$1.25 per ton at dump.

Allowed coal at half price, or \$1.00 per ton.

Allowed coal at \$1.18 per ton.

Allowed coal at half price, or \$1.20 per ton.

From 9.5 to 35.5 cents.

Also house rent reduced about 33 cents per week.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

B.—THE MINER AND THE PRODUCT—Concluded.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain.]

Estab- lish- ment num- ber.	Amount paid by miner per week for—				Benef- it of miner per week from free fuel.	Actual conditions of mining.					Coal mined (tons of 2,000 pounds).	
	Smith- ing.	Oil.	Gun- pow- der.	Other pur- poses.		Description of coal.	Tons mined per miner per week.	Size of ton (pounds)	Pay of miner per ton.	Check weigh- men em- ployed.	Total.	Per miner per week.
153					(a)	Run of mine	21.0	2,205	(b)	No...	6,000	35.2
154					(a)	Run of mine.	21.0	2,205	(b)	No...	4,663	22.1
155					(a)	Run of mine.	41.0	2,205	(b)	No...	16,832	45.7
156	(c)		(d)		\$0.100	Run of mine.	17.0	2,205	\$0.347	No...	17,692	19.7
157	\$0.163	\$0.728	\$0.165		.050	Run of mine.	34.4	2,205	.133	No...	683,046	40.1
158	.161	.728	.165		.054	Run of mine.	39.6	2,205	.144	No...	420,741	43.6
159	.107	.280			(a)	Run of mine	15.0	2,205	.424	No...	244,877	18.5
160		.214			(f)	Run of mine	16.2	2,205	.774	No...	98,066	17.9
161						Run of mine.	18.6	2,240	(g)	Yes...	48,737	26.2
162						Run of mine.	18.6	2,240	(h)	Yes...	71,875	28.2
163						Run of mine.	18.0	2,240	(i)	Yes...	30,769	20.2
164						Run of mine.	18.0	2,240	(j)	Yes...	60,903	20.2
165			(k)			Run of mine	17.8	2,240	(l)	Yes...	458,124	19.6
166			.426		.527	Run of mine	14.6	2,240	.543	Yes...	537,850	16.5
167					.242	Run of mine.	12.0	2,240	(m)	Yes...	148,875	14.4
168			.487		.537	Run of mine	15.0	2,240	.584	Yes...	49,437	16.8
169			.487		.243	Run of mine	21.0	2,240	(n)	Yes...	78,364	23.5
170			.527		.537	Run of mine.	(o)	2,240	.517	Yes...	149,806	(p)
171	.123				.514	Run of mine	39.0	2,240	(q)	Yes...	168,208	43.7
172					.518	Run of mine.	18.0	2,240	.406	Yes...	37,567	16.6
173	\$0.061	.123	(r)	s. 0.061		Run of mine	11.5	2,240	(t)	Yes...	1,108,495	12.9

a 50 per cent. reduction from market price.

b Paid by the square metre of surface mined.

c Miners do their own smithing.

d From 10 to 40 cents.

e Allowed coal at cost price.

f Allowed coal at \$1.43 per ton.

g From 36.8 to 41.6 cents.

h From 33.4 to 42.6 cents.

i From 39.6 to 44.1 cents.

j From 36.7 to 46.6 cents.

k From 24.3 to 48.6 cents.

l From 22.4 to 38.5 cents.

m 22.1 and 40.1 cents.

n 45.2 and 49.1 cents.

o From 18 to 25 tons.

p From 20.1 to 28 tons.

q 12.3, 15.4, and 38.2 cents, according to quality of coal.

r Not reported.

s Accident relief society.

t From 45.6 to 61.6 cents for large coal, and from 38.5 to 55.6 cents for small coal.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

C.—CHEMICAL ANALYSIS OF COAL (PER CENT.)

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 166 are on the continent of Europe; and numbers 167 to 173 are in Great Britain.]

Establishment number.	Water.	Volatile combustible matter.	Fixed carbon.	Sulphur.	Ash.
1	1.506	30.480	61.690	.470	8.942
2	(a)	(a)	(a)	(a)	(a)
3	2.348	34.120	69.750	.480	2.610
4	.990	30.750	58.950	(b)	18.210
5	1.020	31.850	63.630	Trace.	3.310
6	(a)	(a)	(a)	(a)	(a)
7	(a)	(a)	(a)	(a)	(a)
8	(a)	(a)	(a)	(a)	(a)
9	3.280	28.280	49.000	1.540	4.540
10	3.100	33.380	53.570	(c)	8.740
11	(a)	(a)	(a)	(a)	(a)
12	(a)	(a)	(a)	(a)	(a)
13	(a)	(a)	(a)	(a)	(a)
14	(a)	(a)	(a)	(a)	(a)
15	(a)	(a)	(a)	(a)	(a)
16	3.000	31.420	57.380		15.700
17	(a)	(a)	(a)	(a)	(a)
18	(a)	(a)	(a)	(a)	(a)
19	3.320	30.310	58.490	2.220	6.100
20	3.280	34.280	49.000	1.540	4.540
21	(a)	(a)	(a)	(a)	(a)
22	(a)	(a)	(a)	(a)	(a)
23	(a)	(a)	(a)	(a)	(a)
24	7.100	40.690	49.000	1.200	4.000
25	.600	34.600	78.500	1.900	2.300
26	.900	34.800	79.500	1.800	2.300
27	(a)	(a)	(a)	(a)	(a)
28	(a)	(a)	(a)	(a)	(a)
29	(a)	(a)	(a)	(a)	(a)
30	(a)	(a)	(a)	(a)	(a)
31	(a)	(a)	(a)	(a)	(a)
32	(a)	(a)	(a)	(a)	(a)
33	(a)	(a)	(a)	(a)	(a)
34	(a)	(a)	(a)	(a)	(a)
35	(a)	(a)	(a)	(a)	(a)
36	(a)	(a)	(a)	(a)	(a)
37	(a)	(a)	(a)	(a)	(a)
38	(a)	(a)	(a)	(a)	(a)
39	(a)	(a)	(a)	(a)	(a)
40	(a)	(a)	(a)	(a)	(a)
41	(a)	(a)	(a)	(a)	(a)
42	(a)	(a)	(a)	(a)	(a)
43	(a)	(a)	(a)	(a)	(a)
44	(a)	(a)	(a)	(a)	(a)
45	(a)	(a)	(a)	(a)	(a)
46	(a)	(a)	(a)	(a)	(a)
47	(a)	(a)	(a)	(a)	(a)
48	(a)	(a)	(a)	(a)	(a)
49	(a)	(a)	(a)	(a)	(a)
50	(a)	(a)	(a)	(a)	(a)
51	(a)	(a)	(a)	(a)	(a)
52	(a)	(a)	(a)	(a)	(a)
53	(a)	(a)	(a)	(a)	(a)
54	(a)	(a)	(a)	(a)	(a)
55	(a)	(a)	(a)	(a)	(a)
56	(a)	(a)	(a)	(a)	(a)
57	(a)	(a)	(a)	(a)	(a)
58	(a)	(a)	(a)	(a)	(a)
59	(a)	(a)	(a)	(a)	(a)
60	(a)	(a)	(a)	(a)	(a)
61	(a)	(a)	(a)	(a)	(a)
62	(a)	(a)	(a)	(a)	(a)
63	(a)	(a)	(a)	(a)	(a)
64	(a)	(a)	(a)	(a)	(a)
65	(a)	(a)	(a)	(a)	(a)
66	(a)	(a)	(a)	(a)	(a)
67	(a)	(a)	(a)	(a)	(a)
68	(a)	(a)	(a)	(a)	(a)
69	(a)	(a)	(a)	(a)	(a)
70	(a)	(a)	(a)	(a)	(a)
71	(a)	(a)	(a)	(a)	(a)
72	(a)	(a)	(a)	(a)	(a)
73	(a)	(a)	(a)	(a)	(a)
74	(a)	(a)	(a)	(a)	(a)
75	(a)	(a)	(a)	(a)	(a)
76	(a)	(a)	(a)	(a)	(a)
77	(a)	(a)	(a)	(a)	(a)
78	(a)	(a)	(a)	(a)	(a)
79	(a)	(a)	(a)	(a)	(a)
80	(a)	(a)	(a)	(a)	(a)
81	(a)	(a)	(a)	(a)	(a)
82	(a)	(a)	(a)	(a)	(a)
83	(a)	(a)	(a)	(a)	(a)
84	(a)	(a)	(a)	(a)	(a)
85	(a)	(a)	(a)	(a)	(a)
86	(a)	(a)	(a)	(a)	(a)
87	(a)	(a)	(a)	(a)	(a)
88	(a)	(a)	(a)	(a)	(a)
89	(a)	(a)	(a)	(a)	(a)
90	(a)	(a)	(a)	(a)	(a)
91	(a)	(a)	(a)	(a)	(a)
92	(a)	(a)	(a)	(a)	(a)
93	(a)	(a)	(a)	(a)	(a)
94	(a)	(a)	(a)	(a)	(a)
95	(a)	(a)	(a)	(a)	(a)
96	(a)	(a)	(a)	(a)	(a)
97	(a)	(a)	(a)	(a)	(a)
98	(a)	(a)	(a)	(a)	(a)
99	(a)	(a)	(a)	(a)	(a)
100	(a)	(a)	(a)	(a)	(a)
101	(a)	(a)	(a)	(a)	(a)
102	(a)	(a)	(a)	(a)	(a)
103	(a)	(a)	(a)	(a)	(a)
104	(a)	(a)	(a)	(a)	(a)
105	(a)	(a)	(a)	(a)	(a)
106	(a)	(a)	(a)	(a)	(a)
107	(a)	(a)	(a)	(a)	(a)
108	(a)	(a)	(a)	(a)	(a)
109	(a)	(a)	(a)	(a)	(a)
110	(a)	(a)	(a)	(a)	(a)
111	(a)	(a)	(a)	(a)	(a)
112	(a)	(a)	(a)	(a)	(a)
113	(a)	(a)	(a)	(a)	(a)
114	(a)	(a)	(a)	(a)	(a)
115	(a)	(a)	(a)	(a)	(a)
116	(a)	(a)	(a)	(a)	(a)
117	(a)	(a)	(a)	(a)	(a)
118	(a)	(a)	(a)	(a)	(a)
119	(a)	(a)	(a)	(a)	(a)
120	(a)	(a)	(a)	(a)	(a)
121	(a)	(a)	(a)	(a)	(a)
122	(a)	(a)	(a)	(a)	(a)
123	(a)	(a)	(a)	(a)	(a)
124	(a)	(a)	(a)	(a)	(a)
125	(a)	(a)	(a)	(a)	(a)
126	(a)	(a)	(a)	(a)	(a)
127	(a)	(a)	(a)	(a)	(a)
128	(a)	(a)	(a)	(a)	(a)
129	(a)	(a)	(a)	(a)	(a)
130	(a)	(a)	(a)	(a)	(a)
131	(a)	(a)	(a)	(a)	(a)
132	(a)	(a)	(a)	(a)	(a)
133	(a)	(a)	(a)	(a)	(a)
134	(a)	(a)	(a)	(a)	(a)
135	(a)	(a)	(a)	(a)	(a)
136	(a)	(a)	(a)	(a)	(a)
137	(a)	(a)	(a)	(a)	(a)
138	(a)	(a)	(a)	(a)	(a)
139	(a)	(a)	(a)	(a)	(a)
140	(a)	(a)	(a)	(a)	(a)
141	(a)	(a)	(a)	(a)	(a)
142	(a)	(a)	(a)	(a)	(a)
143	(a)	(a)	(a)	(a)	(a)
144	(a)	(a)	(a)	(a)	(a)
145	(a)	(a)	(a)	(a)	(a)
146	(a)	(a)	(a)	(a)	(a)
147	(a)	(a)	(a)	(a)	(a)
148	(a)	(a)	(a)	(a)	(a)
149	(a)	(a)	(a)	(a)	(a)
150	(a)	(a)	(a)	(a)	(a)
151	(a)	(a)	(a)	(a)	(a)
152	(a)	(a)	(a)	(a)	(a)
153	(a)	(a)	(a)	(a)	(a)
154	(a)	(a)	(a)	(a)	(a)
155	(a)	(a)	(a)	(a)	(a)
156	(a)	(a)	(a)	(a)	(a)
157	(a)	(a)	(a)	(a)	(a)
158	(a)	(a)	(a)	(a)	(a)
159	(a)	(a)	(a)	(a)	(a)
160	(a)	(a)	(a)	(a)	(a)
161	(a)	(a)	(a)	(a)	(a)
162	(a)	(a)	(a)	(a)	(a)
163	(a)	(a)	(a)	(a)	(a)
164	(a)	(a)	(a)	(a)	(a)
165	(a)	(a)	(a)	(a)	(a)
166	(a)	(a)	(a)	(a)	(a)
167	(a)	(a)	(a)	(a)	(a)
168	(a)	(a)	(a)	(a)	(a)
169	(a)	(a)	(a)	(a)	(a)
170	(a)	(a)	(a)	(a)	(a)
171	(a)	(a)	(a)	(a)	(a)
172	(a)	(a)	(a)	(a)	(a)
173	(a)	(a)	(a)	(a)	(a)

a. By separate determination. 2.230.
 b. By separate determination. 2.310.
 c. By separate determination. 0.571.
 d. By separate determination. 1.190.

A Sulphur, by separate determination. 0.730.
 B Water, by separate determination. 2.320, and
 sulphur, by separate determination. 0.590.
 C Sulphur, by separate determination. 0.730.
 D Sulphur, by separate determination. 0.590.
 E Sulphur, by separate determination. 2.000.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

C.—CHEMICAL ANALYSIS OF COAL (PER CENT.)—Continued.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 181 are in the Dominion of Canada; numbers 182 to 189 are on the continent of Europe; and numbers 191 to 193 are in Great Britain.]

Establishment number.	Water.	Volatile combustible matter.	Fixed carbon.	Sulphur.	Ash.
67	(a)	(a)	(a)	(a)	(a)
68	4.070	41.130	48.500	(b)	5.300
69	(a)	(a)	(a)	(a)	(a)
70	4.200	37.010	51.640	(c)	7.150
71	4.660	42.450	47.260	(d)	4.950
73	(a)	(a)	(a)	(a)	(a)
74	4.230	40.660	49.780	(e)	4.720
75	(a)	(a)	(a)	(a)	(a)
76	5.060	38.480	52.410	(f)	5.130
77	(a)	(a)	(a)	(a)	(a)
78	5.000	29.130	61.450	780	2.030
79	(a)	(a)	(a)	(a)	(a)
80	(a)	(a)	(a)	(a)	(a)
81	0.950	38.800	51.000	(g)	1.250
82	.410	29.160	67.080	.970	2.490
83	.410	29.160	67.080	.970	2.490
84	(a)	(a)	(a)	(a)	(a)
85	(a)	(a)	(a)	(a)	(a)
86	(a)	(a)	(a)	(a)	(a)
87	(a)	(a)	(a)	(a)	(a)
88	(a)	(a)	(a)	(a)	(a)
89	(a)	(a)	(a)	(a)	(a)
90	.800	23.200	72.350	.590	3.000
91	(a)	(a)	(a)	(a)	(a)
92	(a)	(a)	(a)	(a)	(a)
93	(a)	(a)	(a)	(a)	(a)
94	(a)	(a)	(a)	(a)	(a)
95	.780	20.640	74.823	.567	3.250
96	1.000	28.000	66.000	1.800	4.000
97	(a)	(a)	(a)	(a)	(a)
98	.836	21.537	71.643	.835	2.250
99	.560	18.540	77.190	(h)	3.720
100		18.300	78.600	.400	2.700
101	(a)	(a)	(a)	(a)	(a)
102	(a)	(a)	(a)	(a)	(a)
103	(a)	(a)	(a)	(a)	(a)
104	.836	21.944	72.363	(i)	3.826
106	.610	30.837	63.220	.580	4.757
108	.754	20.821	63.090	.785	4.550
107	(a)	(a)	(a)	(a)	(a)
108	.825	21.225	74.183	.818	2.140
109	(a)	(a)	(a)	(a)	(a)
110	(a)	(a)	(a)	(a)	(a)
111		18.300	78.600	.400	2.700
112	(a)	(a)	(a)	(a)	(a)
113	(a)	(a)	(a)	(a)	(a)
114	(a)	(a)	(a)	(a)	(a)
115	(a)	(a)	(a)	(a)	(a)
116	(a)	(a)	(a)	(a)	(a)
117	(a)	(a)	(a)	(a)	(a)
118	(a)	(a)	(a)	(a)	(a)
119	(a)	(a)	(a)	(a)	(a)
120	(a)	(a)	(a)	(a)	(a)
121	(a)	(a)	(a)	(a)	(a)
122	.620	33.640	58.470	1.030	6.250
123	(a)	(a)	(a)	(a)	(a)
124	.720	34.070	61.340	k. 720	3.150
125		31.995	72.048	1.144	2.815
126	(a)	(a)	(a)	(a)	(a)
127	(a)	(a)	(a)	(a)	(a)
128	.620	33.640	58.470	1.030	6.250
129	(a)	(a)	(a)	(a)	(a)
130	(a)	(a)	(a)	(a)	(a)
131	.600	35.180	58.820	.980	4.150
132		27.745	63.381	1.639	7.223

a Not reported.

b Ash and sulphur combined.

c Sulphur, by separate determination, 3.090.

d Sulphur, by separate determination, 3.290.

e Sulphur, by separate determination, 2.010.

f Sulphur, by separate determination, 1.090.

g Sulphur, by separate determination, 1.290.

h Sulphur, by separate determination, 0.601.

i Sulphur, by separate determination, 0.504.

j Bitumen.

k Sulphur and phosphorus.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

C.—CHEMICAL ANALYSIS OF COAL (PER CENT.)—Concluded.

[Establishments numbers 1 to 144 are in the United States; numbers 147 to 181 are in the Dominion of Canada; numbers 182 to 190 are on the continent of Europe; and numbers 191 to 173 are in Great Britain.]

Establishment number.	Water.	Volatile combustible matter	Fixed carbon.	Sulphur.	Ash.
133	1.633	31.606	71.753	(a)	5.613
134	(b)	(b)	(b)	(b)	(b)
135	(b)	(b)	(b)	(b)	(b)
136	.510	36.220	53.990	.630	8.550
137		20.000	75.100	.490	4.300
138	(b)	(b)	(b)	(b)	(b)
139	(b)	(b)	(b)	(b)	(b)
140	1.300	21.100	74.200	.700	2.700
141	.655	20.340	74.765	.735	2.505
142	1.610	45.170	44.300	1.230	8.230
143	(b)	(b)	(b)	(b)	(b)
144	.780	10.350	72.950	(c)	6.800
145	1.200	43.200	46.300	(d)	9.210
146	(b)	(b)	(b)	(b)	(b)
147	(b)	(b)	(b)	(b)	(b)
148	(b)	(b)	(b)	(b)	(b)
149	(b)	(b)	(a)	(b)	(b)
150	1.200	23.050	69.050	.380	6.400
151	1.115	32.382	60.013	(e)	6.290
152		15.450	70.9 ^f	Trace	13.600
153		10.000	62.1 ^g	1.250	17.500
154		19.000	62.1 ^g	1.250	17.500
155		19.000	62.250	1.250	17.500
156		12.920	75.430	Trace.	10.630
157	(b)	(b)	(b)	(b)	(b)
158	(b)	(b)	(b)	(b)	(b)
159	(b)	(b)	(b)	(b)	(b)
160	7.000	(b)	(b)	.500	4.500
161		7.700	60.780	1.020	1.500
162		7.700	60.780	1.020	1.500
163		7.700	60.780	1.020	1.500
164		7.700	60.780	1.020	1.500
165		15.300	62.700	.040	21.000
166	4.610	15.650	75.650	1.910	2.500
167	.850	36.250	58.870	(f)	2.900
168	(b)	(b)	(b)	(b)	(b)
169	(b)	(b)	(b)	(b)	(b)
170		38.600	58.400		3.000
171		13.110	84.420	.620	1.850
172	(b)	(b)	(b)	(b)	(b)
173	(b)	(b)	(b)	(b)	(b)

a Sulphur, by separate determination, 0.515.

b Not reported.

c Sulphur, by separate determination, 0.660.

d Sulphur, by separate determination, 1.400.

e Sulphur, by separate determination, 1.360.

f Sulphur, by separate determination, 0.040.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

D.—GENERAL STATEMENT OF COST FOR THE PERIOD.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 169 are on the continent of Europe; and numbers 161 to 173 are in Great Britain. Insurance, interest, depreciation of value of plant, charges for freight of product to place of free delivery, and royalty to the owners of the soil are not included, but royalty to the state, when paid, is included under taxes.]

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.		Taxes.	Gross total.	Value of screenings.	Net total.
			Timber.	Other.				
1	\$127,046	\$4,237	\$320	\$12,133	\$250	\$144,146	—	\$144,146
2	26,000	900	191	3,200	780	29,071	—	29,071
3	414,600	27,081	20,781	42,526	1,384	517,322	—	517,322
4	250,790	9,437	3,100	12,106	530	276,959	—	276,959
5	574,840	12,000	7,000	72,806	3,500	670,146	—	670,146
6	4,275	—	100	100	—	4,475	—	4,475
7	128,469	4,500	4,876	3,723	2,220	158,807	\$18,000	140,807
8	128,000	5,563	4,078	7,450	3,234	148,286	17,000	132,286
9	104,508	5,324	5,888	7,242	900	133,862	19,000	114,862
10	112,552	2,400	4,860	6,403	2,700	127,505	—	127,505
11	120,852	4,800	3,800	3,650	500	129,302	22,000	107,302
12	23,012	1,500	1,367	2,253	1,250	28,382	—	28,382
13	47,378	2,600	1,082	1,805	287	54,240	7,500	46,740
14	68,686	2,542	876	2,184	889	74,175	12,000	62,175
15	73,953	2,700	2,409	3,773	550	83,385	12,000	71,385
16	41,151	2,480	1,022	1,732	293	47,724	6,800	40,924
17	33,065	1,350	600	937	250	36,202	5,200	31,002
18	20,324	2,360	985	2,360	187	26,116	6,500	19,616
19	24,937	248	1,632	1,974	250	28,231	4,000	24,231
20	42,422	240	2,672	2,429	234	48,496	5,200	43,296
21	11,711	408	410	701	185	13,415	1,750	11,665
22	15,018	444	467	734	67	16,720	1,400	15,320
23	12,113	480	582	588	270	14,043	1,800	12,243
24	43,531	548	1,680	2,410	234	48,413	—	48,413
25	75,132	2,060	1,706	2,900	150	82,898	12,000	70,898
26	21,882	3,000	608	1,296	250	27,036	—	27,036
27	64,319	3,000	1,705	3,798	1,761	73,573	9,025	64,548
28	80,127	3,260	3,330	7,599	2,000	106,295	17,220	89,075
29	22,710	2,340	1,171	1,128	350	27,600	4,000	23,600
30	84,900	3,000	2,000	2,500	500	93,900	18,000	75,900
31	14,780	1,140	380	1,009	95	17,304	1,750	15,554
32	48,129	3,500	1,024	2,584	—	55,455	8,240	47,215
33	10,346	500	323	325	80	11,353	1,700	9,653
34	6,442	790	344	119	33	8,210	840	7,370
35	198,780	5,200	7,564	7,276	6,028	214,758	—	214,758
36	48,241	4,010	2,180	2,084	733	57,228	—	57,228
37	180,624	3,200	6,500	6,610	2,783	199,697	—	199,697
38	50,077	1,212	1,411	4,858	1,687	58,225	—	58,225
39	13,121	483	443	844	212	15,104	—	15,104
40	83,760	3,224	1,152	4,806	34	92,952	5,824	87,128
41	16,321	2,400	411	1,071	65	20,268	6,288	13,980
42	16,108	823	608	6,085	48	23,664	6,708	16,956
43	68,200	900	1,000	1,877	136	72,113	4,056	68,057
44	16,838	2,100	204	737	—	19,877	2,478	17,399
45	50,061	1,240	707	1,405	253	53,666	10,800	42,866
46	95,318	4,950	1,683	9,088	120	110,516	18,065	92,451
47	41,119	2,100	1,000	1,575	887	46,621	4,909	41,712
48	105,082	6,000	6,868	8,882	76	126,909	12,128	114,781
49	15,015	900	255	675	110	16,955	2,477	14,478
50	24,585	200	298	2,106	25	27,213	4,968	22,245
51	28,087	723	326	2,065	34	31,237	2,200	29,037
52	5,798	550	580	1,200	31	8,209	420	7,789
53	39,798	2,900	1,729	1,324	29	45,780	8,000	37,780
54	88,851	5,098	3,528	7,066	70	104,601	13,530	91,071
55	24,087	2,500	300	—	—	27,387	3,373	24,014
56	30,026	1,900	961	1,602	65	34,238	4,000	30,238
57	55,970	4,500	645	1,698	27	62,840	10,000	52,840
58	108,185	6,620	2,111	1,734	108	118,738	8,890	109,848
59	18,550	2,625	525	873	38	22,613	4,650	17,963
60	48,481	2,958	1,304	5,216	—	57,959	8,307	49,652
61	19,180	1,805	921	3,052	321	25,319	5,565	19,754
62	18,119	2,640	502	1,716	145	24,122	5,100	19,022
63	10,827	1,200	722	8,907	178	22,834	7,268	15,566
64	54,258	5,400	1,140	4,345	439	65,553	10,125	55,428
65	60,154	3,400	1,199	2,347	75	75,775	18,548	57,227
66	40,677	1,500	1,561	1,832	31	45,404	8,283	37,121
67	72,835	2,600	1,175	2,240	99	78,349	11,727	66,622
68	40,307	900	1,915	7,550	74	50,755	11,727	39,028
69	48,470	1,800	1,190	8,498	61	59,023	12,000	47,023
70	50,395	500	343	1,193	89	52,738	8,850	43,888

REPORT OF THE COMMISSIONER OF LABOR.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT
VARIOUS MINES IN VARIOUS STATES—Continued.

B.—GENERAL STATEMENT OF COST FOR THE PERIOD—Continued.

Domestic numbers 1 to 145 are in the United States; numbers 147 to 151 are in the Dominion of Wales; numbers 152 to 200 are on the continent of Europe; and numbers 161 to 173 are in Great Britain. Domestic, foreign, depreciation of value of plant, charges for freight of product to place of sale, and royalty to the owners of the coal are not included, but royalty to the state, when paid, is reported under taxes.

No. of mine.	State and territory.	Supplies and repairs.		Taxes.	Gross total.	Value of screenings.	Net total.
		Timber.	Other.				
145	W. Va.	\$1,034	\$824	\$552	\$14,800	\$15,811	\$23,079
146	Idaho	2,250	3,250	41	34,773	3,920	30,853
147	W. Va.	797	708	345	18,428	4,080	11,538
148	Idaho	1,005	1,005	33	26,150	2,810	23,340
149	W. Va.	4,448	10,808	330	208,406	22,750	245,746
150	Idaho	4,448	30,808	46	30,808		30,808
151	W. Va.	1,034	18,034	7,570	418,634	48,677	398,057
152	France	1,034	1,034	82	29,244	4,101	25,053
153	France	1,141	1,141	645	29,720	3,278	23,444
154	France	1,034	1,034	20	24,904	1,800	23,104
155	France	3,678	3,678	903	75,029	8,253	68,774
156	France	3,678	3,678	1,255	90,060	7,970	82,090
157	France	1,348	1,348	434	71,814	7,187	64,457
158	France	3,200	3,200	350	92,436	8,787	83,649
159	France	1,475	1,475	425	111,040	8,005	102,635
160	France	1,200	1,200	5,579	103,232		103,232
161	France	541	541	15	4,484		4,499
162	France	365	365	75	14,078	1,000	13,078
163	France	164	164	85	20,978	1,045	19,933
164	France	2,250	2,250	400	34,482		34,482
165	France	1,200	1,200	100	23,414	1,800	22,614
166	France	4,785	4,785	842	170,405		170,405
167	France	2,406	2,406	219	45,173	5,200	39,973
168	France	4,124	4,124	634	55,578		55,578
169	France	861	861	428	49,342		49,342
170	France	1,184	1,184	2,001	81,850	6,007	75,843
171	France	4,106	4,106	1,288	117,084		117,084
172	France	4,569	4,569	538	64,070		64,070
173	France	784	784	44	36,428		36,428
174	France	2,200	2,200	263	31,181		31,181
175	France	4,291	4,291	333	77,405	13,000	64,405
176	France	1,100	1,100	800	64,800	5,235	60,565
177	France	500	500		35,913		35,913
178	France	1,000	1,000	300	29,340		29,340
179	France	4,020	4,020	1,978	182,813		182,813
180	France	4,287	4,287	1,434	175,087		175,087
181	France	3,668	3,668	150	48,248	5,548	42,700
182	France	3,668	3,668	1,161	108,663		108,663
183	France	6,714	6,714	1,709	145,670		145,670
184	France	4,047	4,047	221	170,760		170,760
185	France	3,218	3,218	680	49,348		49,348
186	France	826	826		60,946		60,946
187	France	302	302		23,087		23,087
188	France	249	249		17,262		17,262
189	France	307	307		25,402		25,402
190	France	863	863	210	30,442	1,388	29,054
191	France	577	577	286	42,335	2,511	39,824
192	France	431	431	332	32,839	2,589	30,250
193	France	896	896	200	41,327	5,100	36,227
194	France	630	630	113	28,405	2,804	25,601
195	France	725	725	125	35,527	3,120	32,407
196	France	480	480	633	47,802	3,880	43,922
197	France	625	625	120	16,124	1,808	14,316
198	France	1,170	1,170	91	28,077	3,420	24,657
199	France	2,268	2,268	632	113,715	6,153	107,562
200	France	1,100	1,100	(5)	7,580		7,580
201	France	1,000	1,000	230	54,340	6,090	48,250
202	France	4,284	4,284	435	125,947	10,744	115,203
203	France	647	647	240	24,627	2,217	22,410
204	France	570	570	76	29,601	2,226	27,375
205	France	711	711	711	63,452	5,412	58,040
206	France	1,644	1,644	309	58,308	6,628	52,080
207	France	1,798	1,798	650	41,110		41,110

Continued on next page. Separately combined with those for other supplies and repairs.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

D.—GENERAL STATEMENT OF COST FOR THE PERIOD—Concluded.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain. Insurance, interest, depreciation of value of plant, charges for freight of product to place of free delivery, and royalty to the owners of the soil are not included, but royalty to the state, when paid, is included under taxes.]

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.		Taxes.	Gross total.	Value of screenings.	Net total.
			Timber.	Other.				
134	\$77,045	\$4,275	\$7,051	\$7,000	\$481	\$92,722	\$12,852	\$70,870
135	15,108	2,240	150	355	100	17,853	1,312	16,541
136	4,475	167	200	831	.....	5,773	1,187	4,586
137	16,126	380	320	140	.....	18,966	.....	18,966
138	7,450	705	150	245	48	8,598	708	7,890
139	50,122	1,500	1,500	2,550	75	64,747	7,257	57,490
140	87,023	2,400	2,833	2,784	226	95,265	.....	95,265
141	267,900	4,750	(a)	\$22,408	(a)	402,140	.....	402,140
142	22,440	1,474	728	1,603	71	26,318	.....	26,318
143	3,727	500	54	285	.....	4,566	.....	4,566
144	200,085	3,700	4,216	9,090	2,235	224,326	.....	224,326
145	22,682	700	870	1,585	312	26,157	.....	26,157
146	8,710	500	500	1,200	30	12,266	.....	12,266
147	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
148	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
149	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
150	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
151	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
152	149,318	8,178	35,877	18,887	\$4,825	\$214,885	.....	\$214,885
153	5,852	527	1,204	749	\$52	\$8,425	.....	\$8,425
154	4,877	288	1,158	583	\$82	\$7,088	.....	\$7,088
155	16,301	861	2,044	2,464	\$295	\$21,925	.....	\$21,925
156	17,352	448	2,808	1,500	\$263	\$23,371	.....	\$23,371
157	102,970	9,185	50,288	96,649	\$23,202	\$221,344	.....	\$221,344
158	123,242	7,102	16,414	23,159	\$12,316	\$191,233	.....	\$191,233
159	193,253	2,121	10,021	43,010	\$14,407	\$271,822	.....	\$271,822
160	77,712	1,106	12,188	8,421	\$5,684	\$105,121	.....	\$105,121
161	40,714	2,008	5,427	8,185	1,146	\$5,430	.....	\$5,430
162	69,694	.....	0,263	9,212	1,883	92,322	.....	92,322
163	33,233	1,413	5,022	6,012	806	46,486	.....	46,486
164	53,123	2,797	8,487	7,878	1,590	73,881	.....	73,881
165	317,651	7,573	38,705	85,823	9,957	437,709	.....	437,709
166	508,118	21,800	33,721	90,217	27,406	741,452	.....	741,452
167	104,815	5,736	6,365	20,809	3,299	141,024	.....	141,024
168	43,547	2,086	2,732	3,990	1,136	54,168	.....	54,168
169	55,841	3,360	3,103	5,391	1,845	69,540	.....	69,540
170	112,149	8,479	6,536	9,303	2,963	139,450	.....	139,450
171	139,702	\$1,164	9,989	10,481	(b)	\$161,330	.....	\$161,330
172	31,058	1,341	1,701	2,575	(b)	\$37,675	.....	\$37,675
173	902,545	25,694	70,535	114,772	\$4,814	1,208,280	.....	1,208,280

a The expenditures for timber and taxes are inseparably combined with those for other supplies and repairs.
b Not reported.

c Including royalty to the state.
d Clerks' salaries only.
e Not including taxes.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

E.—ELEMENTS OF COST IN ONE TON OF 2,000 POUNDS.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada, numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain. Insurance, interest, depreciation of value of plant, charges for freight of product to place of free delivery, and royalty to the owners of the soil are not included, but royalty to the state, when paid, is included under taxes.]

Estab- lish- ment num- ber.	Labor.			Officials and clerks.	Supplies and repairs.		Taxes.	Gross total.	Value of screen- ings.	Net total.
	Miners.	Other.	Total.		Timber.	Other.				
1	\$0.475	\$0.480	\$0.955	\$0.832	\$0.002	\$0.002	\$0.003	\$1.083		\$1.083
2	.460	.131	.591	.032	.005	.017	.019	.704		.704
3	(a)	(b)	.825	.056	.061	.084	.003	1.029		1.029
4	(a)	(b)	.788	.031	.007	.030	.001	.847		.847
5	(a)	(b)	.780	.011	.006	.067	.003	.876		.876
6	.700	.204	.904		.023	.023		1.040		1.040
7	.900	.350	1.250	.041	.044	.079	.020	1.434	\$0.163	1.271
8	.900	.355	1.255	.054	.040	.072	.031	1.453	.166	1.287
9	.930	.166	1.118	.036	.040	.040	.006	1.249	.123	1.116
10	(a)	(b)	.612	.011	.023	.025	.010	.590		.590
11	.725	.278	1.001	.038	.024	.029	.004	1.096	.175	.921
12	(a)	(b)	.543	.025	.023	.037	.021	.648		.648
13	.600	.235	.835	.063	.019	.033	.005	.956	.133	.823
14	.500	.280	.780	.029	.010	.025	.004	.857	.100	.757
15	.625	.219	.844	.021	.028	.043	.006	.963	.187	.776
16	.600	.206	.806	.066	.020	.035	.005	.934	.133	.801
17	.600	.231	.831	.034	.015	.024	.008	.910	.123	.787
18	.700	.298	.998	.080	.025	.080	.005	1.144	.166	.978
19	.875	.275	1.150	.012	.060	.065	.008	1.296	.132	1.164
20	.870	.202	1.072	.006	.067	.061	.008	1.317	.132	1.085
21	.835	.282	1.117	.038	.039	.068	.018	1.268	.108	1.160
22	.875	.240	1.115	.038	.040	.062	.006	1.301	.120	1.181
23		.260	1.094	.044	.033	.053	.024	1.208	.102	1.106
24	.725	.330	1.055	.013	.041	.058	.006	1.173	.166	1.007
25	.725	.212	.937	.025	.021	.032	.003	1.017	.150	.867
26	(a)	(b)	.590	.081	.018	.035	.007	.781		.781
27	d. 310	.350	.660	.837	.018	.040	.018	.783	.100	.683
28	(a)	(b)	.822	.020	.031	.070	.018	.971	.180	.791
29	.578	.263	.841	.087	.034	.033	.010	1.081	.138	.943
30	(f)	(b)	.850	.030	.020	.025	.005	.940	.100	.840
31	d. 200	.506	.706	.083	.019	.054	.003	.866	.094	.772
32	.730	.181	.911	.031	.026	.080	.004	1.073	.150	.923
33	.750	.185	.935	.045	.020	.020	.006	1.026	.150	.876
34	f. 675	.315	.990	.111	.048	.017	.005	1.171	.120	1.051
35	.448	.082	.530	.008	.021	.020	.020	.610		.610
36	.450	.150	.600	.087	.040	.023	.000	.739		.739
37	.448	.077	.525	.011	.021	.028	.012	.597		.597
38	.467	.091	.558	.013	.016	.051	.018	.656		.656
39	.448	.083	.531	.019	.018	.024	.009	.609		.609
40	.750	.453	1.203	.119	.041	.165	.001	1.534	.212	1.322
41	.825	.238	1.063	.156	.027	.070	.004	1.320	.344	.976
42	.650	.118	.768	.040	.038	.383	.002	1.231	.218	.913
43	.650	.104	.754	.010	.011	.021	.002	.788	.056	.732
44	.650	.130	.780	.009	.009	.035		.923	.117	.806
45	.650	.838	1.488	.037	.021	.042	.007	1.605	.321	1.284
46	d. 334	.453	.787	.041	.009	.075	.001	.917	.130	.787
47	.700	.100	.800	.047	.035	.034	.008	1.014	.108	.906
48	.800	.364	1.164	.066	.070	.098	.001	1.399	.145	1.254
49	.850	.376	1.226	.061	.017	.039	.008	1.151	.337	.814
50	.650	.431	1.081	.008	.009	.068	.001	1.163	.155	1.008
51	.650	.201	.851	.022	.010	.063	.001	.947	.087	.860
52	(a)	(b)	.935	.089	.004	.214	.005	1.337	.098	1.239
53	.650	.306	1.156	.084	.080	.039	.001	1.330	.233	1.096
54	.925	.334	1.259	.072	.050	.100	.001	1.482	.191	1.291
55	.650	.163	.813	.033	.010	.017		.913	.112	.801
56	.650	.227	.877	.044	.028	.050	.002	1.001	.117	.884
57	.650	.211	.861	.069	.010	.028	.001	.967	.154	.813
58	.800	.800	1.600	.069	.023	.018	.001	1.210	.092	1.118
59	.800	.200	1.000	.150	.090	.050		1.292	.206	1.086
60	.800	.291	1.091	.087	.028	.117		1.304	.216	1.088

a Miners' rates vary.

b Not reported.

c No hand miners employed.

d Loaders in machine mine.

e Only a few hand miners employed; mostly machine work; hand miners paid 67.5 cents per ton.

f Only a few hand miners employed; mostly machine work; hand miners paid 76 cents per ton.

PART I.—COST OF PRODUCTION.

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TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

E.—ELEMENTS OF COST IN ONE TON OF 2,000 POUNDS—Continued.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe, and numbers 161 to 173 are in Great Britain. Insurance, interest, depreciation of value of plant, charges for freight of product to place of free delivery, and royalty to the owners of the soil are not included, but royalty to the state, when paid, is included under taxes.]

Establishment number.	Labor.			Officials and clerks.	Supplies and repairs.		Taxes.	Gross total.	Value of screenings.	Net total.
	Miners.	Other.	Total.		Timber.	Other.				
61	\$0.010	\$0.121	\$0.131	\$0.073	\$0.038	\$0.130	\$0.013	\$0.003	\$0.218	\$0.775
62	.010	.069	.139	.182	.035	.118	.010	.104	.253	1.312
63	.050	.339	.389	.025	.018	.083	.004	1.115	.154	.961
64	.050	.115	.165	.078	.018	.090	.006	.924	.145	.781
65	.050	.321	.371	.043	.017	.023	.001	1.094	.299	.894
66	.835	.207	1.042	.035	.035	.047	.001	1.163	.211	.953
67	(a)	(b)	.703	.019	.011	.032	.001	.794	.146	.650
68	.030	.439	1.009	.024	.033	.294	.003	1.371	.317	1.054
69	.030	.219	.249	.038	.026	.070	.001	1.100	.249	.898
70	.030	.223	.253	.025	.015	.001	.004	.978	.415	.868
71	.030	.266	.296	.021	.026	.013	.012	1.059	.373	.698
72	.003	.492	1.295	.138	.036	.154	.002	1.645	.185	1.458
73	.750	.771	1.521	.043	.009	.002	.007	1.709	.337	1.745
74	.790	.189	.979	.018	.019	.040	.001	1.037	.145	.892
75	(a)	(b)	.713	.011	.014	.009	.001	.899	.000	.740
76	.500	.210	.710	.047	.017	.001	.001	.656	.....	.654
77	.058	.187	.245	.049	.021	.042	.018	.975	.112	.862
78	.650	.446	1.096	.009	.000	.000	.004	1.345	.193	1.152
79	.675	.213	.888	.020	.017	.044	.004	1.008	.123	.880
80	.050	.202	.252	.022	.018	.025	.001	.916	.000	.814
81	.790	.392	1.092	.019	.078	.006	.010	1.292	.104	1.184
82	.700	.290	1.000	.008	.001	.078	.017	1.245	.110	1.135
83	.700	.185	.885	.009	.021	.008	.007	1.104	.110	.994
84	.790	.236	1.026	.033	.004	.003	.004	1.178	.087	1.091
85	.790	.253	1.043	.020	.031	.025	.004	1.122	.087	1.036
86	.446	.190	.636	.028	.009	.008	.020	.791	.....	.791
87	.416	.077	.522	.027	.038	.000	.002	.687	.....	.687
88	.790	.245	1.035	.006	.014	.030	.006	1.181	.087	1.094
89	.730	.251	.981	.000	.025	.000	.003	1.105	.087	1.018
90	.446	.131	.577	.029	.020	.044	.000	.678	.....	.678
91	.733	.194	.927	.004	.034	.039	.004	1.078	.119	.959
92	.600	.186	.786	.011	.040	.048	.000	.896	.....	.896
93	.790	.093	.883	.023	.031	.008	.007	1.041	.120	.921
94	.446	.156	.602	.022	(d)	d. 335	.007	.686	.....	.686
95	(a)	(b)	.088	.013	.024	.013	.007	.123	.....	.123
96	(a)	(b)	.083	.001	.030	.047	.000	.161	.....	.161
97	.450	.174	.624	.012	(d)	d. 046	.006	.682	.....	.682
98	.416	.190	.612	.005	.015	.049	.008	.717	.....	.717
99	.446	.100	.546	.004	.009	.013	.001	.675	.....	.675
100	.451	.200	.650	.050	.030	.007	.007	.792	.....	.792
101	.725	.168	.893	.040	.019	.005	.005	1.032	.173	.859
102	.750	.181	.931	.018	.035	.017	.007	.979	.073	.902
103	.446	.178	.624	.002	.004	.000	.000	.638	.....	.638
104	.446	.170	.616	.012	.014	.007	.005	.674	.....	.674
105	.416	.045	.531	.010	(d)	d. 031	.006	.673	.....	.673
106	.450	.259	.709	.012	(d)	d. 036	.006	.763	.....	.763
107	(a)	(b)	.927	.001	.032	.000	.003	1.063	.128	.935
108	.416	.080	.526	.004	.018	.031	.006	.585	.....	.585
109	.428	.091	.519	.007	.017	.023	.007	.675	.....	.675
110	.431	.186	.617	.004	.011	.042	.001	.675	.....	.675
111	.450	.230	.680	.046	.030	.065	.008	.819	.....	.819
112	.414	.132	.578	.005	.002	.008	.....	.593	.....	.593
113	.450	.162	.612	.004	.008	.000	.....	.630	.....	.630
114	.416	.091	.537	.004	.007	.000	.....	.554	.....	.554
115	.446	.197	.643	.013	.002	.008	.....	.665	.....	.665
116	.790	.117	.907	.001	.027	.030	.007	1.082	.003	.979
117	.790	.167	.957	.027	.032	.022	.007	1.045	.002	.943
118	.790	.190	.980	.032	.030	.014	.011	1.057	.003	.974
119	.730	.170	.900	.078	.010	.021	.005	1.014	.125	.889
120	.730	.174	.904	.053	.043	.023	.004	1.027	.160	.927

a No band miners employed.

b Not reported.

c Only a few band miners employed; mostly machine work; band miners paid 65 cents per ton.

d The expenditures for timber are inseparably combined with those for other supplies and repairs.

e Miners' rates vary.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

H.—ELEMENTS OF COST IN ONE TON OF 2,000 POUNDS—Continued.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain. Insurance, interest, depreciation of value of plant, charges for freight of product to place of final delivery, and royalty to the owners of the soil are not included, but royalty to the state, when paid, is included under taxes.]

No. of establishment number	Labor		Officials and clerks.	Supplies and repairs.		Taxes.	Gross total.	Value of accruing minerals.	Net total.
	Mine.	Other.		Timber.	Other.				
22	100	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$1.000	\$0.000	\$1.000
23	101	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
24	102	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
25	103	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
26	104	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
27	105	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
28	106	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
29	107	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
30	108	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
31	109	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
32	110	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
33	111	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
34	112	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
35	113	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
36	114	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
37	115	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
38	116	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
39	117	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
40	118	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
41	119	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
42	120	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
43	121	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
44	122	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
45	123	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
46	124	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
47	125	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
48	126	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
49	127	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
50	128	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
51	129	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
52	130	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
53	131	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
54	132	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
55	133	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
56	134	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
57	135	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
58	136	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
59	137	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
60	138	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
61	139	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
62	140	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
63	141	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
64	142	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
65	143	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
66	144	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
67	145	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
68	146	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
69	147	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
70	148	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
71	149	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
72	150	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
73	151	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
74	152	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
75	153	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
76	154	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
77	155	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
78	156	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
79	157	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
80	158	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
81	159	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
82	160	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
83	161	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
84	162	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
85	163	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
86	164	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
87	165	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
88	166	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
89	167	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
90	168	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
91	169	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
92	170	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
93	171	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
94	172	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
95	173	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000

1. The figures for the cost of production of bituminous coal at various mines in various states are based on the following assumptions:—
 a. The figures for the cost of production of bituminous coal at various mines in various states are based on the following assumptions:—
 b. The figures for the cost of production of bituminous coal at various mines in various states are based on the following assumptions:—
 c. The figures for the cost of production of bituminous coal at various mines in various states are based on the following assumptions:—

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

F.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,000 POUNDS.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain. This table is based on the preceding one, neglecting the last two columns; to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader is referred to that table for such information as they furnish. The reason for neglecting the column of deductions for value of screenings in a table of percentages is obvious.]

Establishment number.	Labor.			Officials and clerks.	Supplies and repairs.		Taxes.	Total.
	Miners.	Other.	Total.		Timber.	Other.		
1	43.86	44.33	88.19	2.95	.19	2.40	.19	100
2	62.92	18.61	81.53	2.12	.71	10.94	2.70	100
3	.....	.....	80.18	2.44	2.93	2.16	.29	100
4	.....	.....	83.03	2.48	.83	2.54	.12	100
5	.....	.....	90.07	1.28	.00	7.65	.34	100
6	67.31	22.77	90.08	.....	2.21	2.21	.....	100
7	62.76	24.41	87.17	2.86	2.07	5.51	1.30	100
8	61.94	24.43	86.37	2.72	2.75	5.63	2.13	100
9	70.06	13.45	83.51	2.86	2.30	2.93	.48	100
10	.....	.....	88.29	1.90	2.79	4.21	1.72	100
11	66.15	25.18	91.33	2.47	2.19	2.65	.26	100
12	.....	.....	82.80	2.86	2.39	5.71	2.24	100
13	62.82	24.61	87.43	6.00	1.90	2.46	.82	100
14	58.34	32.72	91.06	2.28	1.17	2.92	.47	100
15	65.65	22.00	87.65	2.26	2.94	4.52	.63	100
16	64.24	22.06	86.30	7.28	2.14	2.75	.52	100
17	68.83	25.39	94.22	2.72	1.65	2.64	.06	100
18	69.97	25.86	95.83	2.28	2.18	2.22	.42	100
19	67.57	21.23	88.80	.98	4.63	2.92	.62	100
20	71.90	16.00	87.90	.40	2.51	2.01	.40	100
21	66.06	22.24	88.30	2.00	2.98	2.29	1.42	100
22	60.39	19.02	79.41	2.01	2.17	4.92	.44	100
23	65.06	21.22	86.28	2.47	4.18	4.18	1.00	100
24	61.81	22.12	83.93	1.11	2.50	4.94	.51	100
25	71.29	20.54	91.83	2.46	2.06	2.16	.20	100
26	.....	.....	80.71	11.06	2.48	4.79	.96	100
27	39.64	45.91	85.55	4.72	2.96	2.12	2.20	100
28	.....	.....	84.00	2.00	2.19	7.21	1.86	100
29	62.44	24.32	86.76	2.20	2.15	2.96	.92	100
30	.....	.....	80.42	2.19	2.12	2.72	.52	100
31	21.27	62.67	83.94	2.62	2.62	2.77	.54	100
32	60.90	16.87	77.77	2.24	1.86	4.66	.27	100
33	73.10	16.63	89.73	4.30	1.95	1.95	.58	100
34	57.64	26.90	84.54	9.48	4.10	1.45	.42	100
35	73.44	16.06	89.50	1.48	2.44	2.28	2.28	100
36	60.89	20.30	81.19	7.71	2.41	4.47	1.22	100
37	75.04	12.00	87.04	1.84	2.52	4.00	2.61	100
38	71.19	12.87	84.06	1.00	2.44	7.78	2.74	100
39	72.22	12.02	84.24	2.12	2.96	5.58	1.48	100
40	48.79	29.86	78.65	7.76	2.67	10.76	.00	100
41	62.50	18.02	80.52	11.82	2.05	5.20	.20	100
42	52.80	9.50	62.30	2.25	2.00	21.11	.16	100
43	81.46	12.02	93.48	1.25	1.28	2.62	.25	100
44	70.42	14.06	84.48	10.72	.92	2.79	.....	100
45	40.75	52.54	93.29	2.22	1.22	2.62	.44	100
46	.....	.....	84.26	4.47	.96	2.18	.11	100
47	77.91	8.96	86.87	4.64	2.45	2.25	.79	100
48	57.18	20.02	77.20	4.72	2.00	7.01	.07	100
49	56.47	22.67	79.14	2.20	1.48	2.29	.00	100
50	65.89	27.06	92.95	.52	.77	2.67	.00	100
51	68.64	21.22	89.86	2.22	1.06	6.65	.11	100
52	.....	.....	80.62	6.06	7.62	10.01	.27	100
53	62.91	22.01	84.92	6.22	2.76	2.92	.07	100
54	62.41	22.54	84.95	4.86	2.27	6.75	.07	100
55	71.19	16.76	87.95	2.00	1.10	1.86	.....	100
56	64.22	22.68	86.90	4.40	2.20	4.00	.20	100
57	67.22	21.42	88.64	7.14	1.02	2.06	.10	100
58	60.12	24.79	84.91	2.70	1.82	1.49	.06	100
59	66.56	15.48	82.04	11.61	2.22	2.87	.16	100
60	61.25	22.32	83.57	2.14	2.22	2.97	.....	100
61	62.44	12.19	74.63	7.22	2.62	12.08	1.21	100
62	44.68	30.50	75.18	10.94	2.10	7.00	.00	100
63	58.30	30.40	88.70	2.24	1.25	7.25	.24	100
64	70.25	12.44	82.69	2.22	1.72	6.00	.62	100
65	61.00	20.17	81.17	2.95	1.00	2.10	.00	100

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

F.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,000 POUNDS.—Continued.

[Establishments numbers 1 to 146 are in the United States, numbers 147 to 151 are in the Dominion of Canada, numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain. This table is based on the preceding one, neglecting the last two columns, to avoid duplicating the notes, which would be the same in substance, they are here omitted and the reader is referred to that table for such information as they furnish. The reason for neglecting the column of deductions for value of screenings in a table of percentages is obvious.]

Establishment number.	Labor.			Officials and clerks.	Supplies and repairs.		Taxes.	Total.
	Miners.	Other.	Total.		Timber.	Other.		
66	71.80	17.00	88.80	2.27	—	4.94	.08	100
67	—	—	92.99	2.51	1.44	2.91	.13	100
68	47.61	32.03	79.63	1.78	2.79	14.58	.15	100
69	59.09	29.09	88.09	3.27	2.18	5.37	.09	100
70	68.46	22.80	90.26	3.55	1.53	5.22	.41	100
71	81.38	25.12	106.50	8.69	2.26	1.43	1.21	100
72	48.67	29.55	78.22	0.50	2.19	0.97	.12	100
73	42.40	43.59	85.99	2.43	4.36	4.54	2.09	100
74	76.18	16.30	92.48	1.73	1.83	3.50	.10	100
75	—	—	93.06	1.36	1.73	3.71	.12	100
76	58.41	34.53	92.94	3.49	1.99	9.46	.12	100
77	87.43	19.18	106.61	5.03	2.15	4.31	1.85	100
78	48.32	34.16	82.48	5.13	3.85	7.14	.39	100
79	67.30	21.59	88.89	2.99	1.70	6.30	2.39	100
80	70.94	23.03	93.97	2.40	1.75	2.73	.11	100
81	61.16	23.37	84.53	.77	5.88	7.59	1.24	100
82	63.45	22.29	85.74	.84	4.90	6.35	1.37	100
83	71.82	15.83	87.65	.83	1.91	8.99	.63	100
84	67.04	23.77	90.81	2.72	.34	6.77	.34	100
85	70.35	22.53	92.88	1.78	2.78	2.22	.38	100
86	63.02	27.11	90.13	4.00	1.28	1.14	2.85	100
87	66.67	11.64	78.31	4.08	6.23	11.99	.30	100
88	68.64	21.26	89.90	5.78	1.22	2.61	.62	100
89	66.06	22.72	88.78	3.15	1.99	.81	.27	100
90	65.78	18.29	84.07	4.29	2.05	0.49	1.18	100
91	68.00	18.00	86.00	5.94	2.22	5.47	.37	100
92	67.72	20.99	88.71	1.24	4.52	5.19	.34	100
93	73.89	8.63	82.52	5.06	2.98	5.97	.67	100
94	65.01	22.74	87.75	3.21	—	8.02	1.01	100
95	—	—	92.39	1.05	3.33	1.00	.63	100
96	—	—	83.66	1.06	3.05	2.06	2.43	100
97	65.03	25.14	90.17	1.73	—	0.94	1.16	100
98	62.29	27.34	89.63	1.70	2.09	6.93	.64	100
99	66.08	23.70	89.78	6.52	1.33	2.22	.15	100
100	66.62	25.35	91.97	6.31	3.79	6.95	.88	100
101	71.22	18.18	89.40	3.88	1.64	6.30	.48	100
102	75.26	14.60	89.86	1.83	3.61	1.76	.93	100
103	69.91	27.90	97.81	.31	6.03	1.25	—	100
104	66.17	25.22	91.39	1.78	2.9	4.01	.74	100
105	77.16	14.71	91.87	1.73	—	5.96	1.04	100
106	58.98	33.94	92.92	1.67	—	4.72	.70	100
107	—	—	87.21	1.07	3.01	7.53	.28	100
108	76.24	13.67	89.91	1.08	—	5.96	1.03	100
109	74.43	15.83	90.26	1.22	2.95	4.35	1.21	100
110	63.65	27.56	91.21	.50	1.63	0.22	.15	100
111	64.95	28.08	93.03	5.63	3.66	6.71	.86	100
112	75.21	22.26	97.47	.84	.34	1.35	—	100
113	71.43	26.71	98.14	.64	1.05	1.27	—	100
114	80.31	16.37	96.68	.72	1.26	1.44	—	100
115	66.07	29.59	95.66	1.03	1.30	1.30	—	100
116	74.30	11.02	85.32	8.67	2.54	3.62	.66	100
117	75.60	15.94	91.54	2.58	3.08	2.11	.67	100
118	74.74	17.05	91.79	3.03	1.80	1.32	1.04	100
119	71.99	16.77	88.76	7.69	.99	2.07	.49	100
120	71.08	16.94	88.02	5.16	4.19	2.34	.36	100
121	71.25	22.36	93.61	3.32	.50	2.65	.30	100
122	74.46	19.98	94.44	2.07	1.00	1.01	.85	100
123	64.43	24.89	89.32	3.71	2.21	3.28	.68	100
124	63.24	29.10	92.34	2.85	.50	4.16	.36	100
125	75.26	14.50	89.76	4.23	4.23	2.05	.72	100
126	63.69	19.74	83.43	6.32	7.89	13.16	—	100
127	76.68	12.67	89.35	3.68	3.36	1.99	.42	100
128	80.96	14.23	95.19	.82	1.12	2.66	.31	100
129	76.69	15.44	92.12	4.20	1.74	2.73	.21	100
130	63.31	23.18	86.49	10.15	1.21	1.91	.28	100
131	62.90	21.26	84.16	3.74	2.20	—	1.18	100

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

F.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,000 POUNDS—Concluded.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 171 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain. This table is based on the preceding one, neglecting the last two columns; to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader is referred to that table for such information as they furnish. The reason for neglecting the column of deductions for value of screenings in a table of percentages is obvious.]

Establishment number.	Labor.			Officials and clerks.	Supplies and repairs.		Taxes.	Total.
	Miners.	Other.	Total.		Timber.	Other.		
132	72.64	15.02	87.66	2.88	2.08	4.88	.50	100
133	65.23	17.08	82.99	2.28	.....	7.25	1.50	100
134	.....	.....	83.14	4.56	2.18	2.50	.53	100
135	64.32	19.82	84.14	12.51	.88	1.94	.53	100
136	50.81	26.75	77.56	2.88	5.18	14.24	.....	100
137	69.15	25.89	95.04	2.33	1.86	.77	.....	100
138	69.33	17.28	86.61	2.26	1.71	2.85	.57	100
139	.....	.....	91.28	2.35	2.33	3.91	.11	100
140	47.36	43.98	91.34	2.50	2.95	2.91	.27	100
141	63.57	27.89	91.46	1.14	.....	7.40	.....	100
142	67.48	17.81	85.29	5.67	2.79	6.07	.27	100
143	58.62	22.96	81.60	11.02	1.17	6.21	.....	100
144	77.24	14.31	91.55	1.55	1.69	2.97	1.03	100
145	58.75	27.97	86.72	2.70	2.41	5.99	1.18	100
146	58.00	20.65	78.65	4.06	7.19	9.75	.25	100
147	32.40	43.46	75.86	2.83	4.73	11.96	5.59	100
148	32.89	48.32	81.21	2.26	2.74	5.26	6.53	100
149	39.33	42.37	81.70	1.16	2.31	8.73	6.10	100
150	33.24	45.67	78.91	4.20	1.34	9.47	6.08	100
151	42.71	41.21	83.92	4.09	2.02	4.89	4.28	100
152	.....	.....	69.57	2.91	18.67	2.84	2.01	100
153	.....	.....	69.47	6.20	14.31	2.91	1.11	100
154	.....	.....	68.82	5.46	16.32	2.22	1.18	100
155	.....	.....	71.05	3.97	12.22	11.36	1.40	100
156	25.04	52.94	77.98	1.99	11.69	7.15	1.19	100
157	25.74	34.26	60.00	2.77	18.51	11.49	7.23	100
158	28.85	40.97	69.82	3.75	8.59	11.45	6.39	100
159	34.59	36.49	71.08	.81	7.03	15.77	5.31	100
160	63.48	8.40	73.88	1.12	11.57	8.02	5.41	100
161	.....	.....	72.42	2.63	9.78	11.12	2.05	100
162	.....	.....	74.38	3.58	10.05	9.97	2.02	100
163	.....	.....	71.48	2.04	10.79	12.97	1.72	100
164	.....	.....	71.89	3.79	11.54	10.64	2.14	100
165	.....	.....	72.50	1.77	8.44	15.00	2.29	100
166	54.69	21.92	76.61	2.94	4.52	12.20	2.73	100
167	.....	.....	74.34	4.01	4.54	14.79	2.22	100
168	47.53	32.85	80.38	3.83	6.94	6.75	2.10	100
169	.....	.....	80.34	4.80	4.43	7.73	2.61	100
170	50.71	31.50	82.21	2.95	4.83	6.81	2.29	100
171	.....	.....	86.53	.72	6.26	6.46	.....	100
172	41.42	41.02	82.44	3.50	4.49	9.48	.....	100
173	.....	.....	79.63	2.94	5.87	9.54	2.02	100

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

G.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS.

[Establishments numbers 1 to 144 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 154 to 180 are on the continent of Europe; and numbers 161 to 173 are in Great Britain.]

Establishment number.	Additional cost.				Total.
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	
1	(a)				(a)
2	(a)		\$2,065	\$1,841	\$3,906
3	(a)	\$56,162			\$56,162
4	\$290		15,120		15,410
5	(a)	2,800			\$2,800
6	(a)				(a)
7	(a)				(a)
8	(a)				(a)
9	(a)				(a)
10	(a)				(a)
11	(a)			5,000	\$5,000
12	(a)				(a)
13	(a)				(a)
14	(a)			785	\$785
15	(a)			3,183	\$3,183
16	(a)				(a)
17	(a)			1,379	\$1,379
18	(a)				(a)
19	(a)				(a)
20	(a)	219			\$219
21	(a)				(a)
22	(a)	287			\$287
23	(a)				(a)
24	(a)			6,096	\$6,096
25	(a)			1,483	\$1,483
26	(a)				(a)
27	(a)				(a)
28	(a)				(a)
29	(a)				(a)
30	(a)				(a)
31	(a)				(a)
32	(a)				(a)
33	(a)				(a)
34	(a)			351	\$351
35	(a)				(a)
36	(a)				(a)
37	(a)				(a)
38	(a)				(a)
39	(a)				(a)
40	(a)			5,756	\$5,756
41	(a)			4,615	\$4,615
42	(a)		2,803	1,185	\$4,050
43	(a)	152	500	9,161	\$9,791
44	(a)			636	\$636
45	(a)			664	\$664
46	(a)	3,599		7,500	\$11,159
47	(a)		2,309	6,927	\$9,236
48	(a)		2,632	13,619	\$16,251
49	(a)			241	\$241
50	(a)	700		2,800	\$3,500
51	(a)				(a)
52	(a)			915	\$915
53	(a)				(a)
54	(a)			11,299	\$11,299
55	(a)				(a)
56	(a)			7,421	\$7,421
57	(a)			4,225	\$4,225
58	(a)	156	8,643	16,300	\$25,141
59	(a)			1,500	\$1,500
60	(a)			5,331	\$5,331
61	(a)	52		1,075	\$1,075
62	(a)	3,000	3,000	1,000	\$7,000
63	(a)			795	\$795
64	(a)	850	2,083	5,097	\$8,030
65	(a)			5,195	\$5,195
66	(a)			5,857	\$5,857
67	(a)			10,366	\$10,366

a Not reported.

b Not including insurance.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

G.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS—Continued.

[Establishments numbers 1 to 144 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain.]

Establishment number.	Additional cost.				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
69	(a)		\$2,080	\$3,233	\$5,313
69	(a)	\$184	5,000	3,600	\$8,788
70	(a)	605		2,325	\$2,930
71	(a)	2,716			\$2,716
72	(a)			2,198	\$2,198
73	\$120	597		588	1,306
74	(a)			2,017	\$2,017
75	(a)		1,030	24,907	\$25,937
76	(a)	40	1,000	2,100	\$3,200
77	(a)	17,641		10,217	\$27,858
78	(a)		\$70	3,283	\$4,133
79	(a)				(a)
80	(a)				(a)
81	(a)				(a)
82	(a)				(a)
83	(a)				(a)
84	(a)				(a)
85	(a)				(a)
86	(a)				(a)
87	(a)			625	\$625
88	(a)				(a)
89	(a)			1,898	\$1,898
90	(a)				(a)
91	(a)			1,400	\$1,400
92	(a)				(a)
93	(a)		1,386	848	\$1,932
94	(a)			8,158	\$8,158
95	(a)		792	8,128	\$8,920
96	(a)	\$,583	815	8,013	\$18,391
97	(a)	(a)		18,110	\$18,110
98	(a)		1,037	11,064	\$12,001
99	(a)	900	800	2,410	\$4,110
100	(a)	1,192		1,972	\$3,164
101	(a)		7,500	5,250	\$12,750
102	(a)				(a)
103	(a)	1,000		5,473	\$6,473
104	(a)		3,000	8,308	\$11,308
105	(a)		7,063	32,904	\$40,967
106	(a)		5,083	24,560	\$29,643
107	(a)	284	1,068	3,379	\$4,731
108	(a)		2,156		\$2,156
109	(a)		3,171	27,126	\$30,297
110	(a)		2,350	20,772	\$23,122
111	(a)	1,008		6,028	\$7,036
112	(a)	1,500		12,630	\$14,130
113	(a)			4,197	\$4,197
114	(a)	600		3,584	\$4,184
115	(a)	750		3,068	\$3,818
116	(a)				(a)
117	(a)				(a)
118	(a)				(a)
119	(a)			4,287	\$4,287
120	(a)				(a)
121	(a)			3,471	\$3,471
122	(a)				(a)
123	(a)				(a)
124	(a)				(a)
125	(a)	1,789			\$1,789
126	(a)	(a)	(a)	712	\$712
127	(a)				(a)
128	(a)				(a)
129	(a)			2,483	\$2,483
130	(a)				(a)
131	(a)				(a)
132	(a)	1,215			\$1,215
133	(a)	1,800	2,500	5,321	\$9,621

a Not reported.

b Not including insurance.

c Not including insurance and interest.

d Not including insurance, interest, and depreciation of value of plant.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

C.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS—Concluded.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 161 are in the Dominion of Canada; numbers 162 to 166 are on the continent of Europe; and numbers 167 to 173 are in Great Britain.]

Establishment number.	Additional cost				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
124	(a)	\$964	\$4,914	\$3,720	b 90,507
125	(a)				(a)
126	(a)			461	b 461
127	(a)	240		1,864	b 1,904
128	(a)				(a)
129	(a)	250	1,800	6,715	b 8,765
144	(a)				(a)
145	(a)	(a)	(a)	54,254	c 54,254
146	(a)		710	1,775	b 2,485
147	(a)			660	b 660
148	(a)				(a)
149	(a)				(a)
150	(a)				(a)
151	(a)				(a)
152	(a)	13,786	12,808		b 26,594
153	(a)				(a)
154	(a)				(a)
155	(a)				(a)
156	(a)	945	1,239		b 2,184
157	(a)		13,705		b 13,705
158	(a)		31,034	2,837	b 33,871
159	(a)				(a)
160	(a)	3,499	3,332		b 6,831
161	(a)			5,542	b 5,542
162	(a)			9,109	b 9,109
163	(a)			3,890	b 3,890
164	(a)			7,718	b 7,718
165	(a)			63,566	b 63,566
166	(a)		54,758	94,021	b 149,779
167	(a)	603	10,171	13,477	b 24,251
168	(a)		1,119	5,817	b 6,936
169	(a)		1,816	12,868	b 14,684
170	(a)		3,444	19,663	b 23,107
171	(a)			18,282	b 18,282
172	(a)	(a)	(a)	5,124	c 5,124
173	(a)			141,289	b 141,289

a Not reported.

b Not including insurance.

c Not including insurance, interest, and depreciation of value of plant.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

H.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,000 POUNDS.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 166 are on the continent of Europe, and numbers 167 to 173 are in Great Britain.]

Establishment number.	Additional costs per ton.				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
1	(a)				(a)
2	(a)		\$0.030	\$0.045	b \$0.075
3	(a)	\$0.118			b .118
4	\$0.001		.034		b .035
5	(a)	.002			b .002
6	(a)				(a)
7	(a)				(a)
8	(a)				(a)
9	(a)				(a)
10	(a)				(a)
11	(a)			.038	b .038
12	(a)				(a)
13	(a)				(a)
14	(a)				(a)
15	(a)			.009	b .009
16	(a)			.062	b .062
17	(a)				(a)
18	(a)			.035	b .035
19	(a)				(a)
20	(a)				(a)
21	(a)	.021			b .021
22	(a)				(a)
23	(a)	.028			b .028
24	(a)				(a)
25	(a)			.075	b .075
26	(a)			.040	b .040
27	(a)				(a)
28	(a)				(a)
29	(a)				(a)
30	(a)				(a)
31	(a)				(a)
32	(a)				(a)
33	(a)				(a)
34	(a)			.050	b .050
35	(a)				(a)
36	(a)				(a)
37	(a)				(a)
38	(a)				(a)
39	(a)				(a)
40	(a)			.207	b .207
41	(a)			.301	b .301
42	(a)		.136	.056	b .192
43	(a)	.002	.005	.101	b .108
44	(a)			.030	b .030
45	(a)			.020	b .020
46	(a)	.030		.062	b .093
47	(a)		.050	.150	b .200
48	(a)		.040	.150	b .190
49	(a)			.017	b .017
50	(a)	.022		.090	b .112
51	(a)				(a)
52	(a)			.151	b .151
53	(a)				(a)
54	(a)			.159	b .159
55	(a)				(a)
56	(a)			.100	b .100
57	(a)			.005	b .005
58	(a)	.002	.000	.168	b .171
59	(a)			.200	b .200
60	(a)			.120	b .120
61	(a)	.021		.050	b .071
62	(a)	.207	.207	.117	b .531
63	(a)			.004	b .004
64	(a)	.013	.044	.072	b .129
65	(a)			.080	b .080
66	(a)			.130	b .130

a Not reported.

b Not including insurance.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

II.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,000 POUNDS—Continued.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe, and numbers 161 to 173 are in Great Britain.]

Establishment number.	Additional cost per ton.				Total.
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	
67	(a)			\$0.100	\$0.100
68	(a)		\$0.056	.000	b. 146
69	(a)	\$0.003	.106	.072	b. 175
70	(a)	.028		.100	b. 126
71	(a)	.064			b. 664
72	(a)			.101	b. 104
73	\$0.013	.064		.004	b. 141
74	(a)			.080	b. 680
75	(a)		.063	.078	b. 078
76	(a)	.001	.028	.060	b. 080
77	(a)	.040		.024	b. 064
78	(a)		.040	.150	c. 190
79	(a)				(a)
80	(a)				(a)
81	(a)				(a)
82	(a)				(a)
83	(a)				(a)
84	(a)				(a)
85	(a)				(a)
86	(a)				(a)
87	(a)			.003	b. 003
88	(a)				(a)
89	(a)			.100	b. 100
90	(a)				(a)
91	(a)				b. 000
92	(a)				(a)
93	(a)		.030	.015	b. 045
94	(a)			.101	b. 101
95	(a)		.012	.134	b. 146
96	(a)	.123	.012	.130	b. 265
97	(a)	(a)		.360	c. 660
98	(a)		.012	.134	b. 146
99	(a)	.017	.015	.045	b. 077
100	(a)	.050		.100	b. 150
101	(a)		.100	.070	b. 170
102	(a)				(a)
103	(a)	.016		.000	b. 104
104	(a)		.061	.080	b. 140
105	(a)		.021	.107	b. 129
106	(a)		.022	.107	b. 129
107	(a)	.006	.025	.078	b. 100
108	(a)		.012		b. 012
109	(a)		.013	.107	b. 120
110	(a)		.012	.107	b. 119
111	(a)	.030		.100	b. 130
112	(a)	.015		.125	b. 150
113	(a)	.021		.112	b. 153
114	(a)	.019		.116	b. 135
115	(a)	.020		.080	b. 100
116	(a)				(a)
117	(a)				(a)
118	(a)				(a)
119	(a)			.105	b. 105
120	(a)				(a)
121	(a)			.100	b. 100
122	(a)				(a)
123	(a)				(a)
124	(a)				(a)
125	(a)	.015			b. 015
126	(a)	(a)	(a)	.071	d. 071
127	(a)				(a)
128	(a)				(a)
129	(a)			.100	b. 100
130	(a)				(a)
131	(a)				(a)

a Not reported.

b Not including insurance.

c Not including insurance and interest.

d Not including insurance, interest, and depreciation of value of plant.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Concluded.

H.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,000 POUNDS—Concluded.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe, and numbers 161 to 173 are in Great Britain.]

Establishment number.	Additional cost per ton.				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
133	(a)	\$0.021	.....	.....	b \$0.021
133	(a)	.030	\$0.042	\$0.050	b .61
134	(a)	.009	.050	.038	b .097
135	(a)	.....	.....	.....	(a)
136	(a)	.....	.....	.083	b .083
137	(a)	.009	.....	.063	b .072
138	(a)	.....	.....	.....	(a)
139	(a)	.003	.025	.003	b .121
140	(a)	.....	.....	.....	(a)
141	(a)	(a)	(a)	.071	c .071
142	(a)	.....	.020	.050	b .070
143	(a)	.....	.....	.125	b .125
144	(a)	.....	.....	.....	(a)
145	(a)	.....	.....	.....	(a)
146	(a)	.....	.....	.....	(a)
147	(a)	.....	.....	.....	(a)
148	(a)	.....	.....	.....	(a)
149	\$0.002	.034	.....	.....	.036
150 .....	.003	.007	.....	.....	.012
151 .....	.007	.011	.....	.....	.018
152	(a)	.057	.053	.....	b .110
153	(a)	.....	.....	.....	(a)
154	(a)	.....	.....	.....	(a)
155	(a)	.....	.....	.....	(a)
156	(a)	.053	.070	.....	b .123
157	(a)	.....	.020	.....	b .020
158	(a)	.....	.078	.007	b .085
159	(a)	.....	.....	.....	(a)
160	(a)	.036	.034	.....	b .070
161	(a)	.....	.....	.127	b .127
162	(a)	.....	.....	.127	b .127
163	(a)	.....	.....	.127	b .127
164	(a)	.....	.....	.127	b .127
165	(a)	.....	.....	.139	b .139
166	(a)	.....	.065	.112	b .177
167	(a)	.004	.068	.091	b .163
168	(a)	.....	.023	.118	b .141
169	(a)	.....	.023	.163	b .186
170	(a)	.....	.023	.131	b .154
171	(a)	.....	.....	.109	b .109
172	(a)	(a)	(a)	.136	c .136
173	(a)	.....	.....	.127	b .127

a Not reported.

b Not including insurance.

c Not including insurance, interest, and depreciation of value of plant.

From the above there have been drawn five subsidiary tables showing summaries of cost of bituminous coal in various countries. They cover averages drawn from forty-seven establishments in the United States for run of mine, from ninety-nine establishments in the United States for lump bituminous coal, from five establishments in the Dominion of Canada for run of mine, from thirteen establishments in Great Britain for run of mine, and from nine establishments on the continent of Europe for run of mine. The average cost per ton, as derived from these establishments, for each district is as follows: In the United States for run of mine, 72.8 cents, with an additional theoretical cost of 5.2 cents; for lump bituminous coal in the United States, 92.5 cents, with an additional theoretical cost of 6 cents; in the Dominion of Canada for run of mine, \$1.044, the additional theoretical cost being 2.2 cents; in Great Britain for run of mine, \$1.004, with a possible additional theoretical cost of 14.6 cents; on the continent of Europe for run of mine, the average cost is 67.2 cents per ton, with an additional theoretical cost of 4.9 cents. The tables showing these summaries are the five following:

SUMMARY OF COST OF BITUMINOUS COAL (RUN OF MINE) IN FORTY-SEVEN ESTABLISHMENTS IN THE UNITED STATES.

[This summary is drawn from sub-tables A to H immediately preceding. The establishments covered are numbers 1 to 6, inclusive, 10, 12, 26, 35 to 39, inclusive, 76, 86, 87, 90, 92, 94, 95, 97 to 100, inclusive, 103 to 106, inclusive, 108 to 115, inclusive, 126, 133, 137, and 140 to 146, inclusive, being all the bituminous coal mines in the United States giving their product as run of mine from which reports were obtained. As may be seen the periods covered are usually twelve months and are in the years 1888, 1889, and 1890. By run of mine is meant all the coal mined of whatever size.]

Elements of cost.	Tons of 2,000 pounds.	
	Cost of 7,446,253.	Average cost of one.
Labor.....	\$4, 826, 053	\$0. 648
Officials and clerks.....	129, 367	. 017
Timber.....	106, 098	. 015
Other supplies and repairs.....	310, 536	. 042
Taxes.....	43, 953	. 006
Total	5, 418, 012	. 728

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[One establishment gave the amount paid for insurance, which is the sum credited to this item below. For forty-six the agents of the Department failed to obtain a statement. Thirteen establishments gave the amount paid for interest; the aggregate of these makes the sum below. Thirty-one reported that there was no expenditure for interest, and for three no statement was obtained. Fourteen establishments gave the amount charged to depreciation; the aggregate of these makes the sum below. Thirty-one reported that nothing was charged to this item, and for two no statement was obtained. Twenty-seven establishments gave the amount paid as royalty to the owners of the soil; the aggregate of these makes the sum below. Nineteen reported that nothing was paid as royalty. The sums entered in the first column below are, of course, apportioned in the second column among the whole forty-seven establishments.]

Insurance	\$290	\$0. 000
Interest	71, 292	. 010
Depreciation of value of plant	46, 747	. 006
Royalty paid to owners of the soil.....	269, 035	. 036
Total	387, 364	. 052

SUMMARY OF COST OF BITUMINOUS COAL (LUMP) IN NINETY-NINE ESTABLISHMENTS IN THE UNITED STATES.

[This summary is drawn from the preceding sub-tables A to H. The establishments covered are numbers 7 to 9, inclusive, 11, 13 to 25, inclusive, 27 to 34, inclusive, 40 to 75, inclusive, 77 to 85, inclusive, 88, 89, 91, 93, 96, 101, 102, 107, 116 to 125, inclusive, 127 to 132, inclusive, 134 to 136, inclusive, 138 and 139, being all the bituminous coal mines in the United States giving their product as lump from which reports were obtained. As may be seen the periods covered are usually twelve months and are in the years 1888, 1889, and 1890. By lump coal is meant all coal which is large enough to pass over the screens used.]

Elements of cost.	Tons of 2,000 pounds.	
	Cost of 5,563,547.	Average cost of one.
Labor.....	\$5,100,628	\$0.933
Officials and clerks.....	232,756	.012
Timber.....	146,484	.026
Other supplies and repairs.....	277,320	.050
Taxes.....	40,273	.007
Gross total.....	5,887,461	1.058
Value of screenings.....	740,624	.133
Net total.....	5,146,837	.925

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[One establishment gave the amount paid for insurance, which makes the sum credited to this item below. For ninety-eight the agents of the Department failed to obtain a statement. Twenty establishments gave the amount paid for interest; the aggregate of these makes the sum below. Seventy-nine reported that there was no expenditure for interest. Seventeen establishments gave the amount charged to depreciation; the aggregate of these makes the sum below. Eighty-two reported that nothing was charged to this item. Fifty-two establishments gave the amount paid as royalty to the owners of the soil; the aggregate of these makes the sum below. Forty-seven reported that nothing was paid as royalty. The sums entered in the first column below are, of course, apportioned in the second column among the whole ninety-nine establishments.]

Insurance.....	\$120	\$0.000
Interest.....	43,962	.008
Depreciation of value of plant.....	50,455	.009
Royalty paid to owners of the soil.....	240,436	.043
Total.....	334,973	.060

SUMMARY OF COST OF BITUMINOUS COAL (RUN OF MINE) IN FIVE ESTABLISHMENTS IN THE DOMINION OF CANADA.

[This summary is drawn from the preceding sub-tables A to H, though the figures of cost are there omitted and the notation made "not reported" simply to prevent identification of individual establishments. The establishments covered are numbers 147 to 151, inclusive, being all the bituminous coal mines in the Dominion of Canada from which reports were obtained. As may be seen, the period covered in each case is the calendar year 1889. By run of mine is meant all the coal mined of whatever size.]

Elements of cost.	Tons of 2,000 pounds.	
	Cost of 893,032.	Average cost of one.
Labor.....	\$751,730	\$0.842
Officials and clerks.....	22,456	.025
Timber.....	24,506	.027
Other supplies and repairs.....	78,629	.088
Taxes (a).....	55,248	.062
Total.....	932,569	1.044

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Three establishments gave the amount paid for insurance; the aggregates of these make the sum credited to this item below. For two the agents of the Department failed to obtain a statement. Three establishments gave the amount paid for interest; the aggregate of these make the sum below. Two reported that there was no expenditure for interest. All five establishments reported that nothing was charged to depreciation and that nothing was paid as royalty to the owners of the soil. The aggregates entered in the first column below are, of course, apportioned in the second column among the whole five establishments.]

Insurance.....	\$2,091	\$0.002
Interest.....	17,608	.020
Depreciation of value of plant.....		
Royalty paid to owners of the soil.....		
Total.....	19,699	.022

a Including royalty paid to the state.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

F.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,000 POUNDS.—Continued.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain. This table is based on the preceding one, neglecting the last two columns, to avoid duplicating the notes, which would be the same in substance, they are here omitted and the reader is referred to that table for such information as they furnish. The reason for neglecting the column of deductions for value of screenings in a table of percentages is obvious.]

Establishment number.	Labor.			Officials and clerks.	Supplies and repairs.		Taxes.	Total.
	Miners.	Other.	Total.		Timber.	Other.		
66	71.80	17.80	89.60	2.27	2.61	4.64	100	100
67			92.89	2.51	1.48	2.91	.13	100
68	47.41	32.03	79.43	1.75	3.79	14.88	.15	100
69	58.00	23.00	81.00	2.27	2.19	6.37	.09	100
70	68.48	22.80	91.28	2.58	1.53	5.72	.41	100
71	61.28	25.13	86.41	2.59	2.28	1.42	1.23	100
72	48.67	24.25	72.92	2.50	2.19	2.87	.12	100
73	42.40	43.58	85.98	2.43	4.86	4.64	2.09	100
74	76.18	18.80	94.98	1.72	1.83	2.86	.10	100
75			93.08	1.36	1.73	3.71	.12	100
76	58.41	24.53	82.94	2.43	1.98	9.46	.12	100
77	67.49	19.18	86.67	2.02	2.15	4.31	1.85	100
78	48.23	33.16	81.39	2.13	5.93	7.14	.30	100
79	67.30	21.28	88.58	2.90	1.70	4.30	2.39	100
80	76.98	22.05	99.03	2.40	1.75	2.73	.11	100
81	61.18	22.87	84.05	.77	5.88	7.58	1.24	100
82	59.45	23.29	82.74	.64	4.90	0.35	1.37	100
83	71.33	10.62	81.95	.82	1.91	8.00	.83	100
84	67.08	23.77	90.85	2.72	.34	3.77	.34	100
85	70.35	22.58	92.93	1.78	2.76	2.22	.26	100
86	63.03	27.11	90.14	4.00	1.28	1.16	2.85	100
87	66.87	11.64	78.51	4.06	5.25	11.99	.30	100
88	68.64	21.72	90.36	5.73	1.22	2.01	.22	100
89	66.06	22.72	88.78	8.15	1.99	.81	.27	100
90	65.78	19.33	85.10	4.29	2.95	0.49	1.18	100
91	64.00	18.00	82.00	5.94	2.22	3.47	.37	100
92	67.78	20.99	88.77	1.24	4.52	5.19	.34	100
93	75.69	8.23	83.92	5.98	2.98	3.57	.67	100
94	65.91	23.74	89.65	2.21		8.02	1.01	100
95			82.30	1.60	2.32	2.98	.83	100
96			83.06	0.96	2.03	2.98	2.45	100
97	65.03	28.14	93.17	1.73		0.94	1.16	100
98	62.29	27.34	89.63	.70	2.09		.81	100
99	68.08	23.78	91.86	6.82	1.33	2.22	.13	100
100	56.83	25.25	82.07	6.31	2.79	4.95	.88	100
101	71.22	16.28	87.50	3.88	1.64	0.20	.48	100
102	75.26	16.00	91.26	1.85	3.61	1.75	.93	100
103	69.91	27.90	97.81	.31	.63	1.28		100
104	68.17	25.22	93.39	1.78	2.8	4.01	.74	100
105	77.16	14.71	91.87	1.78		4.36	1.04	100
106	64.96	23.94	88.90	1.67		4.72	.70	100
107			87.21	1.07		7.53	.28	100
108	76.24	13.87	90.11	.68	2.08	4.20	1.03	100
109	74.43	15.33	89.76	1.21	2.05	4.35	1.21	100
110	83.45	27.50	110.95	.50	1.83	6.22	.15	100
111	54.95	28.08	83.03	5.82	3.66	6.71	.86	100
112	75.21	22.28	97.47	.64	.34	1.35		100
113	71.43	25.71	97.14	.54	.88	1.27		100
114	80.31	16.37	96.68	.72	1.20	1.44		100
115	68.97	29.58	98.55	1.95	.30	1.20		100
116	74.29	11.02	85.31	8.67	2.54	2.62	.66	100
117	75.00		91.50	2.58		2.11	.67	100
118	74.74	17.08	91.82	3.03	1.69	1.32	1.04	100
119	71.99	16.77	88.76	7.89	.99	2.07	.49	100
120	71.09	16.94	88.03	5.16	4.19	2.24	.39	100
121	71.20	22.30	93.50	3.32	.58	2.08	.39	100
122	74.46	19.98	94.44	2.07	1.60	1.04	.65	100
123	64.43	24.80	89.23	2.71	2.21	3.40	.68	100
124	62.04	29.10	91.14	2.83	.50	4.16	.36	100
125	75.26	13.50	88.76	4.23	4.23	2.08	.72	100
126	52.89	19.74	72.63	6.32	7.09	13.16		100
127	70.68	13.07	83.75	2.68	3.36	1.40	.47	100
128	60.96	14.23	75.19	.83	1.12	2.08	.31	100
129	70.68	15.44	86.12	4.20	.74	2.72	.21	100
130	61.31	23.16	84.47	10.13	1.21	1.91	.50	100
131	66.90	21.28	88.18	3.74	2.20	2.68	1.18	100

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

F.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,000 POUNDS—Concluded.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 173 are in Great Britain. This table is based on the preceding one, neglecting the last two columns; to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader is referred to that table for such information as they furnish. The reason for neglecting the column of deductions for value of screenings in a table of percentages is obvious.

Establishment number.	Labor.			Officials and clerks.	Supplies and repairs.		Taxes.	Total.
	Miners.	Other.	Total.		Timber.	Other.		
132	72.64	15.02	87.66	3.88	3.08	4.88	.50	100
133	65.23	17.68	82.90	8.26	.....	7.25	1.59	100
134	.....	.....	83.14	4.56	3.18	8.59	.53	100
135	64.32	19.82	84.14	12.51	.88	1.04	.53	100
136	50.81	26.75	77.56	2.88	5.18	14.34	.....	100
137	60.15	25.89	95.04	2.33	1.86	.77	.....	100
138	60.33	17.28	86.01	8.26	1.71	2.85	.57	100
139	.....	.....	91.28	2.35	2.35	3.91	.11	100
140	47.36	43.98	91.34	2.50	2.98	2.91	.27	100
141	63.57	27.89	91.46	1.14	.....	7.40	.....	100
142	67.48	17.81	85.29	5.67	2.70	6.07	.27	100
143	58.62	22.98	81.60	11.02	1.17	6.21	.....	100
144	77.24	14.31	91.55	1.55	1.90	3.97	1.03	100
145	58.75	27.97	86.72	2.70	3.41	5.99	1.18	100
146	58.00	20.65	78.65	4.06	7.19	9.75	.35	100
147	32.40	43.46	75.86	2.83	4.73	11.08	5.50	100
148	33.89	48.32	82.21	3.26	2.74	5.26	6.53	100
149	39.33	42.37	81.70	1.16	2.31	8.73	6.10	100
150	33.24	45.67	78.91	4.20	1.34	9.47	6.08	100
151	42.71	41.21	83.92	4.09	3.02	4.69	4.38	100
152	.....	.....	69.57	2.91	16.67	8.84	2.01	100
153	.....	.....	69.47	6.20	14.31	8.91	1.11	100
154	.....	.....	68.82	5.46	16.32	8.22	1.18	100
155	.....	.....	71.05	3.97	12.22	11.36	1.40	100
156	25.04	52.04	77.08	1.99	11.69	7.15	1.19	100
157	25.74	34.26	60.00	2.77	18.51	11.49	7.23	100
158	28.85	40.97	69.82	3.75	8.59	11.45	6.39	100
159	34.59	36.49	71.08	.81	7.03	15.77	5.31	100
160	63.48	8.40	73.88	1.12	11.57	8.02	6.41	100
161	.....	.....	73.42	3.63	9.78	11.12	2.05	100
162	.....	.....	74.38	3.58	10.05	9.97	2.03	100
163	.....	.....	71.48	3.04	10.79	12.97	1.72	100
164	.....	.....	71.89	3.79	11.54	10.64	2.14	100
165	.....	.....	72.50	1.77	8.44	15.00	2.29	100
166	54.69	21.92	76.61	2.94	4.52	12.20	3.73	100
167	.....	.....	74.34	4.01	4.54	14.79	2.32	100
168	47.53	32.85	80.38	3.83	6.94	6.75	2.10	100
169	.....	.....	80.34	4.83	4.43	7.73	2.61	100
170	50.71	31.50	82.21	3.95	4.83	6.81	2.20	100
171	.....	.....	86.55	.73	6.26	6.46	.....	100
172	41.42	41.02	82.44	3.59	4.49	9.48	.....	100
173	.....	.....	79.63	2.94	5.87	9.54	2.02	100

1911		1912		1913		1914		1915		1916		1917		1918		1919		1920		1921		1922		1923		1924		1925		1926		1927		1928		1929		1930		1931		1932		1933		1934		1935		1936		1937		1938		1939		1940		1941		1942		1943		1944		1945		1946		1947		1948		1949		1950		1951		1952		1953		1954		1955		1956		1957		1958		1959		1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971		1972		1973		1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		2037		2038		2039		2040		2041		2042		2043		2044		2045		2046		2047		2048		2049		2050		2051		2052		2053		2054		2055		2056		2057		2058		2059		2060		2061		2062		2063		2064		2065		2066		2067		2068		2069		2070		2071		2072		2073		2074		2075		2076		2077		2078		2079		2080		2081		2082		2083		2084		2085		2086		2087		2088		2089		2090		2091		2092		2093		2094		2095		2096		2097		2098		2099		2100		2101		2102		2103		2104		2105		2106		2107		2108		2109		2110		2111		2112		2113		2114		2115		2116		2117		2118		2119		2120		2121		2122		2123		2124		2125		2126		2127		2128		2129		2130		2131		2132		2133		2134		2135		2136		2137		2138		2139		2140		2141		2142		2143		2144		2145		2146		2147		2148		2149		2150		2151		2152		2153		2154		2155		2156		2157		2158		2159		2160		2161		2162		2163		2164		2165		2166		2167		2168		2169		2170		2171		2172		2173		2174		2175		2176		2177		2178		2179		2180		2181		2182		2183		2184		2185		2186		2187		2188		2189		2190		2191		2192		2193		2194		2195		2196		2197		2198		2199		2200		2201		2202		2203		2204		2205		2206		2207		2208		2209		2210		2211		2212		2213		2214		2215		2216		2217		2218		2219		2220		2221		2222		2223		2224		2225		2226		2227		2228		2229		2230		2231		2232		2233		2234		2235		2236		2237		2238		2239		2240		2241		2242		2243		2244		2245		2246		2247		2248		2249		2250		2251		2252		2253		2254		2255		2256		2257		2258		2259		2260		2261		2262		2263		2264		2265		2266		2267		2268		2269		2270		2271		2272		2273		2274		2275		2276		2277		2278		2279		2280		2281		2282		2283		2284		2285		2286		2287		2288		2289		2290		2291		2292		2293		2294		2295		2296		2297		2298		2299		2300		2301		2302		2303		2304		2305		2306		2307		2308		2309		2310		2311		2312		2313		2314		2315		2316		2317		2318		2319		2320		2321		2322		2323		2324		2325		2326		2327		2328		2329		2330		2331		2332		2333		2334		2335		2336		2337		2338		2339		2340		2341		2342		2343		2344		2345		2346		2347		2348		2349		2350		2351		2352		2353		2354		2355		2356		2357		2358		2359		2360		2361		2362		2363		2364		2365		2366		2367		23
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TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

G.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS—Continued.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 159 are on the continent of Europe; and numbers 161 to 173 are in Great Britain.]

Establishment number.	Additional cost.				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
69	(a)		\$2,089	\$3,333	\$ 5,422
70	(a)	\$18*	5,000	2,500	\$ 8,708
71	(a)	603		2,325	\$ 2,928
72	(a)	2,716			\$ 2,716
73	(a)			2,198	\$ 2,198
74	\$120	597		2,589	\$ 3,306
75	(a)			2,017	\$ 2,017
76	(a)		1,000	24,907	\$ 25,907
77	(a)	40	1,000	2,100	\$ 3,200
78	(a)	17,441		10,217	\$ 27,658
79	(a)		870	3,263	\$ 4,133
80	(a)				(a)
81	(a)				(a)
82	(a)				(a)
83	(a)				(a)
84	(a)				(a)
85	(a)				(a)
86	(a)				(a)
87	(a)			625	\$ 625
88	(a)				(a)
89	(a)			1,698	\$ 1,698
90	(a)				(a)
91	(a)			1,400	\$ 1,400
92	(a)				(a)
93	(a)		1,286	548	\$ 1,833
94	(a)			5,158	\$ 5,158
95	(a)		792	9,138	\$ 9,930
96	(a)	8,658	615	9,013	\$ 18,291
97	(a)	(a)		15,110	\$ 15,110
98	(a)		1,037	11,964	\$ 13,001
99	(a)	906	800	2,410	\$ 4,116
100	(a)	1,192		3,972	\$ 5,164
101	(a)		7,500	5,250	\$ 12,750
102	(a)				(a)
103	(a)	1,000		5,473	\$ 6,473
104	(a)		3,000	5,209	\$ 8,209
105	(a)		7,003	33,904	\$ 40,907
106	(a)		5,883	24,590	\$ 30,473
107	(a)	286	1,088	3,379	\$ 4,753
108	(a)		2,156		\$ 2,156
109	(a)		2,171	27,120	\$ 29,291
110	(a)		2,250	20,772	\$ 23,022
111	(a)	1,808		6,028	\$ 7,836
112	(a)	1,500		13,830	\$ 15,330
113	(a)	800		4,197	\$ 4,997
114	(a)	800		3,584	\$ 4,384
115	(a)	750		3,066	\$ 3,816
116	(a)				(a)
117	(a)				(a)
118	(a)				(a)
119	(a)			4,287	\$ 4,287
120	(a)				(a)
121	(a)			3,471	\$ 3,471
122	(a)				(a)
123	(a)				(a)
124	(a)				(a)
125	(a)				(a)
126	(a)	1,788			\$ 1,788
127	(a)	(a)	(a)	712	\$ 712
128	(a)				(a)
129	(a)			2,483	\$ 2,483
130	(a)				(a)
131	(a)				(a)
132	(a)	1,215			\$ 1,215
133	(a)	1,600	2,506	5,321	\$ 9,427

a Not reported.

b Not including insurance.

c Not including insurance and interest.

d Not including insurance, interest, and depreciation of value of plant.

TABLE VIII. COST OF PRODUCTION OF BITUMINOUS COAL AT
VARIOUS MINES IN VARIOUS STATES—Continued.

46. - ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS—Continued.

(Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Japan; numbers 152 to 160 are on the continent of Europe; and numbers 161 to 171 are in Great Britain.)

Establishment number,	Additional cost.				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
12227	(a)	6864	84,914	82,729	\$ 89,597
12228	(a)				(a)
122	(a)			461	\$ 461
123	(a)	360		1,664	\$ 2,024
124	(a)				(a)
125	(a)	250	1,808	6,715	\$ 8,774
126	(a)				(a)
127	(a)	(a)	(a)	84,284	\$ 84,284
128	(a)		716	1,775	\$ 2,491
129	(a)			608	\$ 608
130	(a)				(a)
131	(a)				(a)
132	(a)				(a)
133	(a)				(a)
134	(a)				(a)
135	(a)				(a)
136	(a)				(a)
137	(a)				(a)
138	(a)				(a)
139	(a)				(a)
140	(a)				(a)
141	(a)				(a)
142	(a)				(a)
143	(a)				(a)
144	(a)				(a)
145	(a)				(a)
146	(a)				(a)
147	(a)				(a)
148	(a)				(a)
149	(a)				(a)
150	(a)				(a)
151	(a)				(a)
152	(a)				(a)
153	(a)				(a)
154	(a)				(a)
155	(a)				(a)
156	(a)				(a)
157	(a)				(a)
158	(a)				(a)
159	(a)				(a)
160	(a)				(a)
161	(a)				(a)
162	(a)				(a)
163	(a)				(a)
164	(a)				(a)
165	(a)				(a)
166	(a)				(a)
167	(a)				(a)
168	(a)				(a)
169	(a)				(a)
170	(a)				(a)
171	(a)				(a)

a The interest and depreciation of value of plant are included in the cost of the coal.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

H.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,000 POUNDS.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 166 are on the continent of Europe, and numbers 167 to 173 are in Great Britain.]

Establishment number.	Additional cost per ton.				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
1	(a)				(a)
2	(a)		\$0.050	\$0.045	b \$0.095
3	(a)	\$0.118			b .118
4	\$0.001		.034		b .035
5	(a)	.002			b .002
6	(a)				(a)
7	(a)				(a)
8	(a)				(a)
9	(a)				(a)
10	(a)				(a)
11	(a)			.038	b .038
12	(a)				(a)
13	(a)				(a)
14	(a)				(a)
15	(a)			.009	b .009
16	(a)			.062	b .062
17	(a)			.035	b .035
18	(a)				(a)
19	(a)				(a)
20	(a)				(a)
21	(a)	.021			b .021
22	(a)				(a)
23	(a)	.026			b .026
24	(a)				(a)
25	(a)			.075	b .075
26	(a)			.040	b .040
27	(a)				(a)
28	(a)				(a)
29	(a)				(a)
30	(a)				(a)
31	(a)				(a)
32	(a)				(a)
33	(a)				(a)
34	(a)			.050	b .050
35	(a)				(a)
36	(a)				(a)
37	(a)				(a)
38	(a)				(a)
39	(a)				(a)
40	(a)			.207	b .207
41	(a)			.201	b .201
42	(a)		.136	.056	b .192
43	(a)	.002	.005	.101	b .108
44	(a)			.030	b .030
45	(a)			.020	b .020
46	(a)	.030		.063	b .093
47	(a)		.050	.150	b .200
48	(a)		.010	.180	b .190
49	(a)			.017	b .017
50	(a)	.022		.000	b .112
51	(a)				(a)
52	(a)			.151	b .151
53	(a)				(a)
54	(a)			.100	b .100
55	(a)				(a)
56	(a)			.100	b .100
57	(a)			.005	b .065
58	(a)	.003	.000	.100	b .261
59	(a)			.200	b .200
60	(a)			.120	b .120
61	(a)	.021		.050	b .071
62	(a)	.207	.207	.117	b .531
63	(a)			.004	b .004
64	(a)	.012	.044	.072	b .128
65	(a)			.080	b .080
66	(a)			.150	b .150

a Not reported.

b Not including insurance.

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Continued.

III.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,000 POUNDS—Continued.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 181 are in the Dominion of Canada; numbers 182 to 199 are on the continent of Europe, and numbers 200 to 278 are in Great Britain.]

Establishment number.	Additional cost per ton.				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
87	(a)			\$0.100	\$0.100
88	(a)		\$0.056	.000	\$.146
89	(a)	\$0.001	.100	.072	\$.175
90	(a)	.028		.100	\$.128
91	(a)	.084			\$.084
92	(a)			.104	\$.104
93	\$0.013	.064		.064	\$.141
94	(a)			.080	\$.080
95	(a)		.003	.078	\$.078
96	(a)	.001	.028	.000	\$.080
97	(a)	.040		.024	\$.064
98	(a)		.040	.150	\$.190
99	(a)				(a)
100	(a)				(a)
101	(a)				(a)
102	(a)				(a)
103	(a)				(a)
104	(a)				(a)
105	(a)				(a)
106	(a)				(a)
107	(a)			.083	\$.083
108	(a)				(a)
109	(a)			.100	\$.100
110	(a)				(a)
111	(a)			.080	\$.080
112	(a)				(a)
113	(a)		.030	.015	\$.045
114	(a)			.101	\$.101
115	(a)		.012	.134	\$.146
116	(a)	.123	.012	.130	\$.265
117	(a)	(a)		.308	\$.080
118	(a)		.018	.134	\$.168
119	(a)	.017	.015	.045	\$.077
120	(a)	.000		.190	\$.130
121	(a)		.100	.070	\$.170
122	(a)				(a)
123	(a)	.010		.090	\$.106
124	(a)		.081	.069	\$.160
125	(a)		.022	.107	\$.129
126	(a)		.022	.107	\$.129
127	(a)	.046	.025	.078	\$.108
128	(a)		.018		\$.018
129	(a)		.013	.107	\$.120
130	(a)		.012	.107	\$.119
131	(a)	.030		.100	\$.180
132	(a)	.013		.135	\$.150
133	(a)	.021		.112	\$.133
134	(a)	.013		.116	\$.135
135	(a)	.020		.080	\$.100
136	(a)				(a)
137	(a)				(a)
138	(a)				(a)
139	(a)			.105	\$.105
140	(a)				(a)
141	(a)			.100	\$.100
142	(a)				(a)
143	(a)				(a)
144	(a)				(a)
145	(a)	.013			\$.015
146	(a)	(a)	(a)	.071	\$.071
147	(a)				(a)
148	(a)			.100	\$.100
149	(a)				(a)
150	(a)				(a)

d Not including insurance, interest, and depreciation of value of plant.

insurance and interest

TABLE VIII.—COST OF PRODUCTION OF BITUMINOUS COAL AT VARIOUS MINES IN VARIOUS STATES—Concluded.

H.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,000 POUNDS—Concluded.

[Establishments numbers 1 to 146 are in the United States; numbers 147 to 151 are in the Dominion of Canada; numbers 152 to 160 are on the continent of Europe, and numbers 161 to 173 are in Great Britain.]

Establishment number.	Additional cost per ton.				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
133	(a)	\$0.021	.....	.....	b \$0.021
133	(a)	.030	\$0.042	\$0.050	b .61
134	(a)	.000	.050	.038	b .097
135	(a)	.....	.....	.....	(a)
136	(a)	.....	.....	.083	b .083
137	(a)	.009	.....	.063	b .072
138	(a)	.....	.....	.....	(a)
139	(a)	.003	.025	.003	b .121
140	(a)	.....	.....	.....	(a)
141	(a)	(a)	(a)	.071	c .071
142	(a)	.....	.020	.050	b .079
143	(a)	.....	.....	.125	b .125
144	(a)	.....	.....	.....	(a)
145	(a)	.....	.....	.....	(a)
146	(a)	.....	.....	.....	(a)
147	(a)	.....	.....	.....	(a)
148	(a)	.....	.....	.....	(a)
149	\$0.002	.034	.....	.....	.036
150 .....	.003	.007	.....	.....	.012
151 .....	.007	.011	.....	.....	.018
152	(a)	.057	.053	.....	b .110
153	(a)	.....	.....	.....	(a)
154	(a)	.....	.....	.....	(a)
155	(a)	.....	.....	.....	(a)
156	(a)	.053	.070	.....	b .123
157	(a)	.....	.020	.....	b .020
158	(a)	.....	.078	.007	b .085
159	(a)	.....	.....	.....	(a)
160	(a)	.036	.034	.....	b .070
161	(a)	.....	.....	.127	b .127
162	(a)	.....	.....	.127	b .127
163	(a)	.....	.....	.127	b .127
164	(a)	.....	.....	.127	b .127
165	(a)	.....	.....	.139	b .139
166	(a)	.....	.065	.112	b .177
167	(a)	.004	.068	.091	b .163
168	(a)	.....	.023	.118	b .141
169	(a)	.....	.023	.163	b .186
170	(a)	.....	.023	.131	b .154
171	(a)	.....	.....	.109	b .109
172	(a)	(a)	(a)	.136	c .136
173	(a)	.....	.....	.127	b .127

a Not reported.

b Not including insurance.

c Not including insurance, interest, and depreciation of value of plant.

PART I.—COST OF PRODUCTION.

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TABLE IX.—COST OF PRODUCTION OF COKE AT VARIOUS OVENS IN VARIOUS STATES—Continued.

B.—CHEMICAL ANALYSIS OF COKE (PER CENT.)

[Establishments numbers 1 to 30 are in the United States; numbers 31 to 40 are on the continent of Europe; and numbers 41 to 45 are in Great Britain.]

Establishment number.	Water.	Volatile combustible matter.	Fixed carbon.	Sulphur.	Ash.
1	.180	.640	89.184	.670	9.346
2	(a)	(a)	(a)	(a)	(a)
3	.080	1.110	90.480	.830	7.500
4	.680	2.500	80.910	1.940	13.970
5	.800	1.000	88.900	Trace.	9.600
6	.250	2.050	85.110	(b)	12.500
7	.700	2.480	83.220	(c)	13.500
8	(a)	(a)	(a)	(a)	(a)
9	1.540	2.370	83.070	■	11.340
10	.130	1.210	87.690	1.070	9.900
11	(a)	(a)	(a)	(a)	(a)
12	(a)	(a)	(a)	(a)	(a)
13	(a)	(a)	(a)	(a)	(a)
14	(a)	(a)	(a)	(a)	(a)
15	(a)	(a)	(a)	(a)	(a)
16	(a)	(a)	(a)	(a)	(a)
17	(a)	(a)	(a)	(a)	(a)
18	(a)	(a)	(a)	(a)	(a)
19	(a)	(a)	(a)	(a)	(a)
20	(a)	(a)	(a)	(a)	(a)
21		1.280	80.380	(d)	8.300
22	(a)	(a)	(a)	(a)	(a)
23	(a)	(a)	(a)	(a)	(a)
24	.280	1.330	77.530	1.060	19.610
25	.950	.480	87.220	.780	10.610
26			94.660	.790	4.650
27	.345	.341	92.664	.730	5.883
28	.290	.140	96.141	.600	2.800
29	(a)	(a)	(a)	(a)	(a)
30	.880	1.440	89.800	(e)	7.800
31	8.000	2.000	79.000	.800	12.500
32	(a)	(a)	(a)	(a)	(a)
33	(a)	(a)	(a)	(a)	(a)
34	4.000		83.950	.550	11.500
35		2.000	87.860	Trace.	10.500
36	8.500	1.500	80.000	■	11.280
37	(a)	(a)	(a)	(a)	(a)
38	(a)	(a)	(a)	(a)	(a)
39	(a)	(a)	(a)	(a)	(a)
40	(a)	(a)	(a)	(a)	(a)
41			88.050	.820	8.130
42	2.400	.500	88.800	.900	8.400
43	1.700		89.900	.750	7.850
44	(a)	(a)	(a)	(a)	(a)
45	(a)	(a)	(a)	(a)	(a)

a Not reported.

b Sulphur, by separate determination, 1.650.

c Sulphur, by separate determination, 1.600.

d Sulphur, by separate determination, 0.600.

e Sulphur included with ash.

TABLE IX.—COST OF PRODUCTION OF COKE AT VARIOUS OVENS IN VARIOUS STATES—Continued.

C.—GENERAL STATEMENT OF COST FOR THE PERIOD.

[Establishments numbers 1 to 30 are in the United States; numbers 31 to 46 are on the continent of Europe; and numbers 47 to 48 are in Great Britain.—Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.]

Establishment number.	Coal for coking.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
1	\$154,043	\$36,409	\$957	\$1,977	\$112	\$193,498
2	123,300	19,785	3,800	800	(a)	\$147,185
3	171,529	24,021	5,988	2,949	183	184,781
4	94,145	17,784	1,500	1,532	=====	115,221
5	454,774	96,304	9,800	10,701	2,000	\$772,579
6	204,957	31,630	(c)	14,850	200	252,546
7	201,123	60,486	(c)	8,530	200	271,221
8	4,801	2,000	=====	100	(a)	\$ 4,701
9	2,480	2,210	100	=====	60	4,660
10	41,296	11,157	800	453	120	\$53,825
11	19,830	7,086	412	727	73	\$27,873
12	24,560	5,928	643	2,013	123	\$32,055
13	121,634	53,338	1,150	12,803	133	199,256
14	30,313	13,616	413	2,343	=====	\$52,685
15	19,254	9,928	750	300	76	\$29,807
16	13,232	7,684	800	700	60	\$22,347
17	26,080	17,838	2,000	(a)	(a)	\$46,528
18	24,282	12,848	2,300	520	60	\$39,950
19	58,298	34,771	2,840	1,254	106	\$97,569
20	34,388	10,761	1,200	250	112	\$46,717
21	141,164	101,611	5,360	42,400	2,000	\$294,535
22	8,958	5,206	1,447	800	130	\$16,533
23	59,710	17,105	2,440	700	216	\$79,671
24	162,008	39,322	4,200	2,000	500	\$208,029
25	86,964	21,102	2,500	1,800	300	\$112,666
26	64,361	9,470	2,700	400	75	\$77,006
27	82,350	45,159	1,250	2,905	60	\$131,669
28	29,226	9,808	2,000	1,670	100	\$42,154
29	40,550	10,450	2,000	1,300	151	\$54,851
30	16,478	6,573	1,000	450	30	\$24,730
31	10,695	1,778	134	103	52	\$12,759
32	17,224	1,912	135	151	116	\$19,600
33	4,644	849	66	85	29	\$ 5,513
34	24,924	1,900	338	308	111	\$27,781
35	48,320	4,150	332	2,200	=====	\$55,192
36	221,076	17,047	(a)	4,643	(a)	\$252,774
37	127,257	22,049	(f)	2,700	\$2,000	\$154,173
38	82,336	5,857	500	153	1,000	\$90,000
39	73,522	10,000	2,737	1,400	525	\$92,184
40	70,373	9,324	735	1,005	207	\$82,645
41	14,324	4,653	84	434	(a)	\$19,495
42	473,171	21,942	(b)	2,000	1,113	\$498,226
43	14,743	2,857	223	807	=====	\$18,629
44	16,047	1,829	150	1,341	=====	\$19,367
45	68,760	7,200	600	2,200	=====	\$78,760

Not reported
 (a) including taxes
 (b) at work very slight, and performed by clerk at another branch of the same establishment.
 (c) including supplies and repairs and taxes.
 (d) including supplies and repairs and for taxes are inseparably combined with them for
 (e) expenditures for officials and clerks and insurance are inseparably combined with them for
 (f) expenditures for officials and clerks and insurance are inseparably combined with them for
 (g) including insurance
 (h) this amount should be deducted \$19,000, the value of coke tax, and amount produced
 (i) this amount should be deducted \$6,150, the value of tax and amount produced during the
 (j) expenditures for officials and clerks are inseparably combined with them for coal.

TABLE IX.—COST OF PRODUCTION OF COKE AT VARIOUS OVENS IN VARIOUS STATES—Continued.

D.—ELEMENTS OF COST IN ONE TON OF 2,000 POUNDS.

(Establishments numbers 1 to 30 are in the United States; numbers 31 to 40 are on the continent of Europe; and numbers 41 to 45 are in Great Britain.—Insurance, interest, depreciation of value of plant, and charges for freight of product to place of free delivery are not included.)

Establishment number.	Coal for coking.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
1	\$2.028	\$0.348	\$0.013	\$0.020	\$0.001	\$2.410
2	1.911	.302	.053	.000	(a)	b 2.277
3	1.897	.373	.079	.003	.002	2.463
4	2.008	.394	.083	.024	.007	2.537
5	1.792	.380	.088	.040	.007	2.168
6	1.884	.338	(a)	.181	.008	2.283
7	1.481	.438	(a)	.000	.008	1.971
8	1.779	.760		.000	(a)	b 2.577
9	.820	.540	.025	.022	.010	1.240
10	1.213	.325	.029	.018	.004	1.584
11	.727	.283	.018	.030	.003	.998
12	.787	.279	.014	.023	.004	1.099
13	.717	.306	.007	.075	.001	1.108
14	.832	.311	.006	.054		1.203
15	.718	.370	.008	.013	.008	1.133
16	.646	.373	.028	.034	.008	1.087
17	1.070	.743	.125	(a)	(a)	d 1.838
18	.535	.333	.006	.012	.008	.893
19	.503	.300	.017	.011	.002	.833
20	.481	.317	.024	.005	.008	.833
21	.551	.399	.021	.100	.018	1.140
22	.488	.257	.000	.022	.000	.760
23	1.333	.386	.056	.018	.005	1.794
24	1.881	.346	.048	.007	.006	2.288
25	1.500	.330	.030	.005	.006	1.870
26	2.408	.419	.120	.015	.008	2.960
27	.928	.454	.012	.080	.001	1.475
28	1.205	.425	.007	.044	.004	1.685
29	1.250	.383	.061	.037	.004	1.656
30	1.108	.403	.070	.046	.002	1.742
31	2.704	.434	.084	.042	.015	3.240
32	2.530	.379	.020	.022	.017	2.968
33	3.321	.274	.033	.017	.010	3.655
34	2.281	.180	.023	.037	.011	2.541
35	1.458	.138	.008	.110		1.715
36	2.493	.183	(a)	.062	(a)	2.743
37	1.298	.242	(f)	.042	f .082	g, h 1.713
38	1.531	.167	.022	.007	.047	1.774
39	1.138	.296		.001	.006	1.440
40	1.528	.200	.010	.080	.000	1.797
41	1.175	.382	.007	.026	(a)	b 1.600
42	h 1.191	.357	(b)	.007	.018	1.563
43	1.020	.385	.030			1.435
44	1.917	.240	.022	.109		2.357
45	1.688	.288	.028	.214		2.394

a Not reported.

b Not including taxes.

c Clerical work very slight, and performed by clerk at another branch of the same establishment.

d Not including supplies and repairs and taxes.

e The expenditures for officials and clerks and for taxes are inseparably combined with those for supplies and repairs.

f The expenditures for officials and clerks and insurance are inseparably combined with those for taxes.

g Including insurance.

h From this amount should be deducted 21.6 cents, the value per ton of product of cinder, tar, and ammonia produced.

i From this amount should be deducted 9.5 cents, the value per ton of product of tar and ammonia produced.

j The expenditures for officials and clerks are inseparably combined with those for coal.

REPORT OF THE COMMISSIONER OF LABOR

SECTION OF COKE AT VARIOUS OVENS IN VARIOUS STATES—Continued.

TABLE SHOWING THE COST OF COKE IN ONE TON OF 2,000 POUNDS.

This table is based on the statement of the various companies in the United States; numbers 31 to 40 are on the statement of the various companies in the United States. This table is based on the prevailing rate and to the extent of the various companies, they are here given, and the balance of the companies are given as they furnish.

State or Territory	Cost per ton	Cost per ton	Officials and clerks	Supplies and repairs	Total	Cost
Ala.	16.40	.54	1.00	.25	18.19	18.19
Ark.	13.28	2.42	1.00	.25	16.95	16.95
Cal.	13.31	3.28	1.00	.25	17.84	17.84
Col.	15.41	1.23	1.00	.25	17.89	17.89
Del.	16.30	1.68	1.00	.25	19.23	19.23
Fla.	12.33	3.50	1.00	.25	17.08	17.08
Ga.	22.57	1.45	1.00	.25	25.27	25.27
Idaho	23.54	2.82	1.00	.25	27.61	27.61
Ill.	45.16	2.02	1.00	.25	48.43	48.43
Ind.	28.71	1.84	1.00	.25	31.80	31.80
Iowa	26.65	1.51	1.00	.25	29.41	29.41
Kan.	23.46	1.28	1.00	.25	25.99	25.99
La.	27.30	.08	1.00	.25	28.63	28.63
Me.	23.83	.75	1.00	.25	25.83	25.83
Mich.	32.89	2.47	1.00	.25	36.61	36.61
Minn.	34.31	2.67	1.00	.25	38.23	38.23
Mo.	38.36	5.45	1.00	.25	45.06	45.06
Mont.	33.77	.73	1.00	.25	35.75	35.75
Nebr.	36.03	2.01	1.00	.25	39.29	39.29
Nev.	28.38	3.23	1.00	.25	32.86	32.86
N.H.	34.46	1.83	1.00	.25	37.54	37.54
N.J.	34.82	7.80	1.00	.25	43.87	43.87
N.M.	21.46	3.07	1.00	.25	25.78	25.78
N.Y.	25.12	2.10	1.00	.25	28.47	28.47
Pa.	17.38	2.65	1.00	.25	21.28	21.28
R.I.	18.12	4.01	1.00	.25	23.38	23.38
S.D.	31.88	.54	1.00	.25	33.67	33.67
Tenn.	23.23	4.77	1.00	.25	29.25	29.25
Tex.	17.01	4.87	1.00	.25	23.13	23.13
Va.	26.56	3.00	1.00	.25	30.81	30.81
Wash.	13.97	1.06	1.00	.25	16.28	16.28
W. Va.	9.73	.70	1.00	.25	11.68	11.68
Wis.	10.22	1.34	1.00	.25	12.81	12.81
Wyo.	7.08	1.38	1.00	.25	9.71	9.71
Unk.	8.11	.47	1.00	.25	9.83	9.83
Unk.	7.04	.....	1.00	.25	8.29	8.29
Unk.	14.11	.....	1.00	.25	15.36	15.36
Unk.	8.41	1.24	1.00	.25	10.90	10.90
Unk.	18.54	3.65	1.00	.25	23.44	23.44
Unk.	11.18	.30	1.00	.25	12.73	12.73
Unk.	23.87	.44	1.00	.25	25.56	25.56
Unk.	21.47	.....	1.00	.25	22.72	22.72
Unk.	13.83	1.22	1.00	.25	16.30	16.30
Unk.	18.57	.38	1.00	.25	20.20	20.20
Unk.	12.03	1.00	1.00	.25	14.28	14.28

TABLE IX.—COST OF PRODUCTION OF COKE AT VARIOUS OVENS IN VARIOUS STATES—Continued.

F.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS.

[Establishments numbers 1 to 30 are in the United States; numbers 31 to 40 are on the continent of Europe; and numbers 41 to 45 are in Great Britain.]

Establishment number.	Additional cost.			
	Insurance.	Interest.	Depreciation of value of plant.	Total.
1	(a)			(a)
2	(a)		\$2,000	b \$2,000
3	(a)	\$2,900		b \$2,900
4	(a)			(a)
5	(a)			(a)
6	(a)			(a)
7	(a)			(a)
8	(a)			(a)
9	(a)			(a)
10	(a)			(a)
11	(a)	(a)	(a)	(a)
12	(a)			(a)
13	(a)			(a)
14	(a)			(a)
15	(a)			(a)
16	(a)			(a)
17	(a)			(a)
18	(a)			(a)
19	(a)			(a)
20	(a)			(a)
21	(a)	4,247		b 4,247
22	(a)			(a)
23	(a)			(a)
24	(a)			(a)
25	(a)			(a)
26	(a)			(a)
27	(a)			(a)
28	(a)			(a)
29	(a)			(a)
30	(a)			(a)
31	(a)			(a)
32	(a)			(a)
33	(a)			(a)
34	(a)			(a)
35	(a)		1,158	b 1,158
36	(a)			(a)
37	(a)			(a)
38	(a)	1,490	1,428	b 2,918
39	(a)		7,976	b 7,976
40	(a)			(a)
41	(a)			(a)
42	(a)			(a)
43	(a)			(a)
44	(a)			(a)
45	(a)			(a)

a Not reported.

b Not including insurance.

TABLE XL.—THE REQUIREMENTS OF COKE AT VARIOUS OVENS IN
VARIOUS STATES.—Continued.

6.—THEORETICAL COST OF COKE REQUIRED FOR THE PRODUCTION OF ONE TON OF IRON
IN THE UNITED STATES.

Numbers 31 to 40 are on the continent of Europe.

Additional cost per ton.			
Insurance.	Interest.	Depreciation of value of plant.	Total.
21	(a)
22	\$.031	\$.031
23	\$.100	\$.100
24	(a)
25	(a)
26	(a)
27	(a)
28	(a)
29	(a)
30	(a)
31	(a)	(a)	(a)
32	(a)
33	(a)
34	(a)
35	(a)
36	(a)
37	(a)
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41	(a)
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49	(a)
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70	(a)
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74	(a)
75	(a)
76	(a)
77	(a)
78	(a)
79	(a)
80	(a)
81	(a)
82	(a)
83	(a)
84	(a)
85	(a)
86	(a)
87	(a)
88	(a)
89	(a)
90	(a)
91	(a)
92	(a)
93	(a)
94	(a)
95	(a)
96	(a)
97	(a)
98	(a)
99	(a)
100	(a)

Not including insurance.

From these calculations we have drawn three tables showing the requirements of coke in thirty establishments in the United States, twenty in the continent of Europe, and in five establishments in the United States. These summaries show that the average cost of coke for the establishments in the United States, when the theoretical cost which might be added is 0.7 of a cent, is 1.0 cent; for the establishments in Europe the average cost for the eight establishments is 1.0 cent and the additional theoretical cost 1.0 cents; and for the five establishments shown give the average cost of coke of 1.0 cent with an additional theoretical cost.

SUMMARY OF COST OF COKE IN THIRTY ESTABLISHMENTS IN THE UNITED STATES.

[This summary is drawn from sub-tables A to G immediately preceding. The establishments covered are numbers 1 to 30, inclusive, being all the coke ovens in the United States from which reports were obtained. As may be seen, the periods covered are usually twelve months and are in the years 1888, 1889, and 1890.]

Elements of cost.	Tons of 2,000 pounds.	
	Cost of 2,036,183.	Average cost of one.
Coal for coking	\$2,481,742	\$1.219
Labor	728,173	.257
Officials and clerks	58,119	.028
Supplies and repairs	118,011	.058
Taxes	9,528	.005
Total	3,393,573	1.667
Tons of coal (2,000 pounds) used in production	3,166,308	
Average pounds of coal necessary to make one ton (2,000 pounds) of coke	2,110	

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[For all thirty establishments the agents of the Department failed to obtain a statement as to the amount paid for insurance. Two establishments gave the amount paid for interest; the aggregate of these makes the sum credited to this item below. Twenty-seven reported that there was no expenditure for interest, and for one the agent of the Department failed to obtain a statement. One establishment gave the amount charged to depreciation, which is the sum below. Twenty-eight reported that nothing was charged to this item, and for one no statement was obtained. The sums entered in the first column below are, of course, apportioned in the second column among the whole thirty establishments.]

Insurance .....	.....	.....
Interest	\$11,316	\$0.006
Depreciation of value of plant	2,000	.001
Total	13,316	.007

SUMMARY OF COST OF COKE IN EIGHT ESTABLISHMENTS ON THE CONTINENT OF EUROPE.

[This summary is drawn from the preceding sub-tables A to G. The establishments covered are numbers 31 to 36, inclusive, 38 and 40, being all the coke ovens on the continent of Europe from which full reports were obtained. As may be seen, the periods covered are irregular and are in the years 1888 and 1889.]

Elements of cost.	Tons of 2,000 pounds.	
	Cost of 210,849.	Average cost of one.
Coal for coking	\$426,894	\$2.025
Labor	40,427	.192
Officials and clerks	2,140	.010
Supplies and repairs	10,496	.050
Taxes	1,704	.008
Total	481,750	2.285
Tons of coal (2,000 pounds) used in production	279,566	
Average pounds of coal necessary to make one ton (2,000 pounds) of coke	2,655	

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[For all eight establishments the agents of the Department failed to obtain a statement as to the amount paid for insurance. One establishment gave the amount paid for interest, which is the sum credited to this item below. Seven reported that there was no expenditure for interest. Two establishments gave the amount charged to depreciation; the aggregate of these makes the sum below. Six reported that nothing was charged to this item. The sums entered in the first column below are, of course, apportioned in the second column among the whole eight establishments.]

Insurance .....	.....	.....
Interest	\$1,499	\$0.007
Depreciation of value of plant	2,586	.012
Total	4,085	.019

SUMMARY OF COST OF COKE IN FIVE ESTABLISHMENTS IN GREAT BRITAIN.

[This summary is drawn from the preceding sub-tables A to G. The establishments covered are numbers 41 to 45, inclusive, being all the coke ovens in Great Britain from which reports were obtained. As may be seen, the periods covered are irregular and are in the year 1889. For all five establishments the agents of the Department failed to obtain a statement as to the amount paid for the theoretical element of insurance. All five reported that there was no expenditure for interest and that nothing was charged to depreciation, the other theoretical elements.]

Elements of cost.	Tons of 2,000 pounds.	
	Cost of 113,446.	Average cost of one.
Coal for coking	\$162,541	\$1.433
Labor	38,490	.339
Officials and clerks	1,126	.010
Supplies and repairs	13,091	.123
Taxes	1,113	.010
Total	217,261	1.915
Tons of coal (2,000 pounds) used in production	187,211	
Average pounds of coal necessary to make one ton (2,000 pounds) of coke	3,300	

SELLING PRICE OF COKE PER TON AT PITTSBURGH, PA.

The price of coke, as sold in the market at Pittsburgh from the latter part of 1887 to May 22, 1890, is shown in the following table:

SELLING PRICE OF COKE PER TON AT PITTSBURGH, PENNSYLVANIA.

[Furnished by H. C. Frick & Co., May 22, 1890.]

Date.	Price.	Date.	Price.
Latter part of 1887.....	\$2.00	Aug. 6 to Oct. 1, 1889.....	\$1.35
Jan. 1 to Feb. 24, 1888.....	1.75	Oct. 1 to Nov. 1, 1889.....	1.50
Feb. 24 to Mar. 1, 1888.....	1.50	Nov. 1, 1889, to Feb. 10, 1890.....	1.75
Mar. 28 to Oct. 26, 1888.....	1.00	Feb. 1 to May 22, 1890.....	2.15
Oct. 26, 1888, to Aug. 6, 1889.....	1.25		

In addition to the foregoing prices, middlemen or brokers are now charged 15 cents per ton, and they in turn charge small consumers another 15 cents per ton.

The following table gives the price of coke at Connellsville for the last 6 years, on board the cars at ovens, per ton of 2,000 pounds:

PRICE OF COKE PER TON AT CONNELLSVILLE, PENNSYLVANIA.

[From the Iron Age, Nov. 12, 1890.]

Month.	1884.	1885.	1886.	1887.	1888.	1889.
January.....	\$1.00	\$1.10	\$1.20	\$1.50	\$1.75	\$1.25
February.....	1.00	1.10	1.25	2.00	1.75	1.25
March.....	1.00	1.10	1.25	2.00	1.50	1.25
April.....	1.10	1.20	1.25	2.00	1.00	1.15
May.....	1.10	1.20	1.50	2.00	1.00	1.10
June.....	1.10	1.20	1.50	2.00	1.00	1.10
July.....	1.00	1.20	1.50	2.00	1.00	1.00
August.....	1.10	1.20	1.50	2.00	1.00	1.00
September.....	1.10	1.20	1.50	2.00	1.00	1.25
October.....	1.10	1.20	1.50	2.00	1.00	1.50
November.....	1.10	1.30	1.50	2.00	1.25	1.75
December.....	1.10	1.20	1.50	2.00	1.25	1.75

AVERAGE PRICE OF COAL AND COKE PER TON IN CHARLEROI, BELGIUM.

[The prices are for tons of 2,000 pounds of coal and coke loaded upon cars at the pits and ovens.]

Month.	Furnace coal.			Coking coal.			Coke.		
	1888.	1889.	1890.	1888.	1889.	1890.	1888.	1889.	1890.
January.....	\$1.479	\$1.530	\$1.894	\$1.227	\$1.670	\$2.512	\$2.093	\$2.498	\$4.298
February.....	1.481	1.543	1.950	1.341	1.636	2.095	2.012	2.498	4.450
March.....	1.441	1.532	2.050	1.402	1.600	2.300	2.020	2.498	4.741
April.....	1.495	1.560	2.213	1.451	1.605	2.257	2.040	2.527	4.955
May.....	1.530	1.546	2.225	1.546	1.725	2.468	2.150	2.541	5.188
June.....	1.500	1.551	.....	1.623	1.732	.....	2.220	2.501	.....
July.....	1.458	1.560	.....	1.603	1.712	.....	2.271	2.506	.....
August.....	1.481	1.604	.....	1.568	1.747	.....	2.287	2.508	.....
September.....	1.527	1.600	.....	1.614	1.714	.....	2.300	2.507	.....
October.....	1.541	1.721	.....	1.670	1.770	.....	2.343	2.638	.....
November.....	1.543	1.707	1.648	1.767	2.364	2.679
December.....	1.486	1.890	1.603	1.800	2.378	2.835

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IRON ORE.

IRON ORE.

The titles of the table and sub-tables relating to the cost of production of iron ore are as follows:

TABLE X.—Cost of Production of Iron Ore at Various Mines in Various States.

- A.—Period covered and quantity of product.
- B.—Chemical analysis of iron ore (per cent.)
- C.—General statement of cost for the period.
- D.—Elements of cost in one ton of 2,240 pounds.
- E.—Per cent. of each element of cost in one ton of 2,240 pounds.
- F.—Additional cost of certain theoretical elements.
- G.—Additional cost of certain theoretical elements in one ton of 2,240 pounds.

In sub-table A the production for the period covered and the average production per day is shown, for most of the mines reported on, in tons of raw ore. For a few of the mines, however, the production is shown in tons of calcined ore, no information as to the quantity of raw ore produced having been obtained by the Department. The quantity of calcined ore produced in a mine during a certain period is, of course, less than the quantity of raw ore, as there is a loss in weight caused by roasting. In sub-table B showing the analyses of the ores produced by the different mines, the analyses are of raw ore or of calcined ore, in accordance with the way in which the production of the mine, to which each analysis applies, has been shown. None of these analyses show the full 100 per cent. of material in the ore, but the principal constituents of the ores are usually all shown, and the metallic iron contained therein always.

In sub-tables C, D, and E the item of fuel does not appear. The cost of fuel was not separately obtained by the agents of the Department, but where such a cost existed it is included in these tables in the cost of supplies. Some of the mines on the continent of Europe pay a royalty to the state. This royalty has not been separately shown, but being in the nature of a tax it has been included with the taxes.

In iron ore as in coal the cost of production necessarily depends largely upon natural conditions. Some ore is hard to mine, and hence not only the labor cost, but to a certain extent all of the other costs will be enhanced, for any difficulties which tend to lessen the quantity of production attainable tend consequently to increase the cost of production. It is in these natural conditions (which are but too faintly indicated by the tables) that the reader must mainly look for explanation of some of the great variations in cost.

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES IN VARIOUS STATES.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT.

Establishment number.	Locality.	Period covered.		Iron ore mined.		
		Terminal dates.	Days of running time.	Character of ore.	Tons of 2,240 pounds.	
					Total.	Per day.
1	United States.....	Sept. 1, 1888, to Aug. 31, 1889	309	Hard and soft.....	83,850	372
2	do.....	Jan. 1, 1889, to Dec. 31, 1889	309	Hard and soft.....	12,096	64
3	do.....	Jan. 1, 1889, to Dec. 31, 1889	250	Medium.....	33,000	132
4	do.....	Feb. 1, 1889, to Jan. 31, 1890	340	Soft.....	49,826	374
5	do.....	Feb. 1, 1889, to Jan. 31, 1890	370	Hard and soft.....	138,655	431
6	do.....	Mar. 1, 1889, to Feb. 28, 1890	300	Hard and soft.....	62,780	310
7	do.....	May 1, 1889, to Feb. 28, 1890	100	Hard.....	37,256	201
8	do.....	Nov. 1, 1889, to Jan. 31, 1890	72	Hard.....	3,654	51
9	do.....	Jan. 1, 1890, to Jan. 31, 1890	25	Hard and soft.....	3,915	157
10	do.....	Nov. 1, 1889, to Nov. 30, 1889	31	(a).....	3,318	144
11	do.....	May 1, 1889, to Apr. 30, 1890	307	Hard.....	52,713	172
12	do.....	Dec. 1, 1888, to Nov. 30, 1889	301	Hard.....	60,030	200
13	do.....	Dec. 1, 1888, to Nov. 30, 1890	305	Soft.....	71,504	234
14	do.....	Dec. 1, 1888, to Nov. 30, 1889	270	Hard.....	17,300	64
15	do.....	Dec. 1, 1888, to Nov. 30, 1889	247	Soft.....	25,200	143
16	do.....	Dec. 1, 1888, to Nov. 30, 1889	253	Soft.....	17,207	68
17	do.....	Dec. 1, 1888, to Nov. 30, 1889	240	Soft.....	37,000	156
18	do.....	Dec. 1, 1888, to Nov. 30, 1889	206	Hard.....	114,378	431
19	do.....	Dec. 1, 1888, to Nov. 30, 1889	247	Soft.....	74,000	300
20	do.....	Jan. 1, 1889, to Dec. 31, 1889	306	Hard.....	215,000	703
21	do.....	Jan. 1, 1889, to Dec. 31, 1889	307	Soft.....	771,279	2,512
22	do.....	Jan. 1, 1889, to Dec. 31, 1889	303	Hard and soft.....	323,342	1,067
23	do.....	Jan. 1, 1889, to Dec. 31, 1889	301	Soft.....	10,000	35
24	do.....	Jan. 1, 1889, to Dec. 31, 1889	308	Soft.....	20,739	67
25	do.....	Jan. 1, 1889, to Dec. 31, 1889	301	Hard.....	8,032	27
26	do.....	Jan. 1, 1889, to Dec. 31, 1889	306	Hard and soft.....	185,434	606
27	do.....	Jan. 1, 1889, to Dec. 31, 1889	313	Soft.....	50,200	160
28	do.....	Jan. 1, 1889, to Dec. 31, 1889	304	Medium.....	170,338	525
29	do.....	Jan. 1, 1889, to Dec. 31, 1889	306	Soft.....	550,972	1,801
30	do.....	Jan. 1, 1889, to Dec. 31, 1889	318	Soft.....	21,500	68
31	do.....	Jan. 1, 1889, to Dec. 31, 1889	300	Soft.....	6,116,000	307
32	do.....	Jan. 1, 1889, to Dec. 31, 1889	305	Hard.....	37,300	123
33	do.....	May 1, 1889, to Apr. 30, 1890	307	Hard and soft.....	210,440	457
34	do.....	May 1, 1889, to Apr. 30, 1890	307	Hard and soft.....	244,000	790
35	do.....	Dec. 1, 1889, to Mar. 31, 1890	152	Hard.....	18,000	125
36	do.....	Nov. 1, 1889, to Apr. 30, 1890	152	Soft.....	26,221	171
37	do.....	Nov. 1, 1889, to Apr. 30, 1890	153	Soft.....	53,315	348
38	do.....	Dec. 1, 1889, to Apr. 30, 1890	127	Soft.....	41,306	326
39	do.....	May 1, 1889, to Apr. 30, 1890	306	Hard.....	455,000	1,528
40	do.....	May 1, 1889, to Apr. 30, 1890	306	Hard and soft.....	317,627	1,032
41	do.....	Jan. 1, 1888, to Dec. 31, 1889	290	Hard and soft.....	45,440	157
42	do.....	Apr. 1, 1888, to Mar. 31, 1889	306	Hard and soft.....	117,403	381
43	do.....	May 1, 1888, to Apr. 30, 1889	302	Hard.....	40,000	132
44	do.....	May 1, 1888, to Jan. 31, 1889	217	Soft.....	2,070	10
45	do.....	June 1, 1888, to May 31, 1889	303	Soft.....	78,500	258
46	do.....	Jan. 1, 1889, to Dec. 31, 1889	313	Hard.....	145,215	464
47	do.....	Jan. 1, 1889, to Dec. 31, 1889	290	Hard.....	14,000	54
48	do.....	Jan. 1, 1889, to Dec. 31, 1889	254	Hard.....	12,300	52
49	do.....	Jan. 1, 1889, to Dec. 31, 1889	258	Hard.....	16,000	56
50	do.....	Jan. 1, 1889, to Dec. 31, 1889	275	Hard and soft.....	5,570	20
51	do.....	Apr. 1, 1889, to Dec. 31, 1889	204	Hard.....	8,217	40
52	do.....	Sept. 1, 1889, to Feb. 28, 1890	94	Hard.....	2,500	27
53	do.....	Oct. 1, 1889, to June 30, 1890	231	Hard.....	7,450	32
54	do.....	Apr. 1, 1889, to Mar. 31, 1890	90	Soft.....	10,340	36
55	do.....	Apr. 1, 1889, to Mar. 31, 1890	307	Hard.....	14,500	54
56	do.....	Jan. 1, 1888, to Dec. 31, 1889	300	Hard and soft.....	6,050	20
57	do.....	July 1, 1888, to June 30, 1889	307	Hard.....	10,572	45
58	do.....	Jan. 1, 1889, to Dec. 31, 1889	240	Soft.....	45,015	181
59	do.....	Jan. 1, 1889, to Dec. 31, 1889	302	Hard.....	7,024	23
60	do.....	Jan. 1, 1889, to Dec. 31, 1889	220	Hard.....	8,815	30
61	do.....	Jan. 1, 1889, to June 30, 1889	182	Hard and soft.....	2,816	20
62	do.....	May 1, 1889, to July 31, 1889	77	Hard.....	2,106	26
63	do.....	July 1, 1889, to Dec. 31, 1889	182	Soft.....	5,477	28

a Not reported.

b Bessemer, 4,000 tons; non-Bessemer, 107,200 tons.

c Bessemer, 65,100 tons; non-Bessemer, 75,410 tons.

d Bessemer, 230,314 tons; non-Bessemer, 300,406 tons.

e Calculated or rounded ore, equals 27,000 tons in the raw state.

f Calculated or rounded ore.

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES IN VARIOUS STATES—Continued.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT—Concluded.

Establishment number.	Locality.	Period covered.		Iron ore mined.		
		Terminal dates.	Days of running time.	Character of ore.	Tons of 2,240 pounds.	
					Total.	Per day.
64	United States.....	Sept. 1, 1889, to Feb. 28, 1890	113	Hard	3,850	34
65	do	Jan. 1, 1889, to Dec. 31, 1889	300	Hard and soft ..	29,543	100
66	do	Feb. 1, 1889, to Jan. 31, 1890	310	Hard	123,574	396
67	do	Jan. 1, 1888, to Dec. 31, 1888	310	Hard and soft ..	30,220	96
68	do	Jan. 1, 1888, to Dec. 31, 1888	312	Hard and soft ..	63,500	204
69	do	Jan. 1, 1888, to Dec. 31, 1888	340	Hard and soft ..	37,548	140
70	do	July 1, 1888, to June 30, 1889	312	Soft	49,400	156
71	do	Jan. 1, 1889, to Dec. 31, 1889	325	Soft	51,551	175
72	do	Jan. 1, 1889, to Dec. 31, 1889	296	Medium	218,753	739
73	Continent of Europe....	July 1, 1887, to June 30, 1888	(a)	Hard	44,250	(a)
74	do	July 1, 1887, to June 30, 1888	(a)	Hard	4,921	(a)
75	do	Apr. 1, 1888, to Mar. 31, 1889	298	Soft	31,691	108
76	do	Jan. 1, 1889, to Dec. 31, 1889	296	Hard	35,041	118
77	do	Jan. 1, 1889, to Dec. 31, 1889	300	Hard	1,340	4
78	do	Jan. 1, 1889, to Dec. 31, 1889	290	Hard	93,338	324
79	do	Jan. 1, 1889, to Dec. 31, 1889	290	Hard	628,030	240
80	do	July 1, 1888, to Sept. 30, 1889	74	Hard	9,858	133
81	do	June 1, 1887, to May 31, 1888	305	Soft	64,877	212
82	do	June 1, 1887, to May 31, 1888	306	Soft	8,07	26
83	do	June 1, 1887, to May 31, 1888	306	Soft	39,685	130
84	do	June 1, 1887, to May 31, 1888	306	Soft	4,434	14
85	do	June 1, 1887, to May 31, 1888	306	Soft	14,104	46
86	do	July 1, 1887, to June 30, 1888	(a)	Hard	8,842	(a)
87	do	July 1, 1887, to June 30, 1888	(a)	Hard	23,621	(a)
88	do	July 1, 1887, to June 30, 1888	(a)	Hard	11,763	(a)
89	do	Jan. 1, 1887, to Dec. 31, 1888	663	Hard	253,398	537
90	do	Jan. 1, 1889, to Dec. 31, 1889	371	Hard and soft ..	63,973	172
91	do	Jan. 1, 1889, to Dec. 31, 1889	300	Soft	245,244	817
92	Great Britain	July 1, 1889, to Dec. 31, 1889	153	Hard	612,104	3,949

a Not reported.

b Calcined or roasted ore.

REPORT OF THE COMMISSIONER OF LABOR.

IRON ORE AT VARIOUS MINES UNITED STATES—Continued.

~~2. - ~~IRON~~ -~~ NAMES OF IRON ORE (PER CENT.)

United States; numbers 73 to 91 are on the continent of

[illegible]

also patterns of behavior.

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES IN VARIOUS STATES—Continued.

B.—CHEMICAL ANALYSIS OF IRON ORE (PER CENT.)—Concluded.

[Establishments numbers 1 to 72 are in the United States; numbers 73 to 91 are on the continent of Europe, and number 92 is in Great Britain.]

Estab- lish- ment num- ber.	Kind of ore.	Iron.	Manga- nese.	Phos- phorus.	Sul- phur.	Silica.	Alu- mina.	Lime.
50	Magnetite	48.000	(a)	(a)	Trace.	(a)	(a)	(a)
51	Magnetite	58.802	(a)	.634	2.130	7.488	(a)	(a)
52	Red hematite	42.000	(a)	(a)	(a)	(a)	(a)	(a)
53	Carbonate	32.500	(a)	.750	Trace.	17.500	(a)	(a)
54	Fossiliferous	47.000	(a)	.025	Trace.	2.000	(a)	(a)
55	Red hematite	43.000	(a)	(a)	(a)	20.000	(a)	(a)
56	Fossiliferous, hard	34.550	(a)	.375	(a)	5.900	(a)	57.350
57	Fossiliferous, soft	47.140	(a)	.480	(a)	12.080	(a)	(a)
58	Hematite	30.000	(a)	.400	(a)	10.000	(a)	18.000
59	Brown hematite	42.000	(a)	.013	..	15.000	(a)	(a)
60	Brown hematite	48.000	(a)	.483	..	15.160	2.810	.290
61	Brown hematite	40.003	(a)	.643	.078	2.507	(a)	(a)
62	Brown hematite	42.000	(a)	.002	..	21.500	(a)	(a)
63	Red hematite, Bessemer	62.000	.137	.034	.061	5.350	2.090	.111
64	Hematite	60.500	(a)	.257	.008	3.700	(a)	(a)
65	(a)	49.000	.150	.750	.090	14.000	5.100	5.000
66	(a)	39.350	(a)	.625	(a)	10.200	5.250	3.600
67	(a)	40.000	3.000	..	..	12.000	(a)	(a)
68	Red iron ore	47.500	3.000	.010	(a)	16.000	(a)	(a)
69	Spathic	37.500	7.500	(a)	Trace.	(a)	(a)	(a)
70	Spathic	35.200	3.200	.010	(a)	7.600	(a)	(a)
71	Spathic	28.800	3.200	Trace.	.027	.214	(a)	.700
72	Spathic (b)	47.420	3.280	Trace.	.025	12.080	(a)	(a)
73	Spathic	35.000	7.500	(a)	.125	9.000	(a)	(a)
74	(a, b)	63.630	(a)	.015	(a)	6.100	1.020	(a)
75	(a, b)	64.120	(a)	.010	(a)	5.900	1.300	(a)
76	(a, b)	64.120	(a)	.016	(a)	5.900	1.300	(a)
77	(a)	68.230	(a)	(a)	(a)	(a)	(a)	(a)
78	(a, b)	61.480	(a)	.020	(a)	8.000	2.000	(a)
79	(a)	38.350	.100	.780	.010	17.000	3.600	(a)
80	(a)	38.000	.150	.650	.010	4.000	4.000	(a)
81	(a)	42.000	.300	.600	.010	8.000	7.150	5.000
82	Brown hematite	52.000	(a)	Trace.	Trace.	9.500	(a)	(a)
83	Brown hematite	60.600	(a)	.024	.100	10.000	(a)	(a)
84	Limonite	49.000	(a)	Trace.	.100	3.500	(a)	(a)
85	oolitic	21.000	(a)	1.000	.000	13.000	(a)	(a)

a Not reported.

b Calcined or roasted ore.

c Including copper.

REPORT OF THE COMMISSIONER OF LABOR.

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES IN VARIOUS STATES—Continued.

C.—GENERAL STATEMENT OF COST FOR THE PERIOD.

(Establishment numbers 1 to 73 are in the United States; numbers 73 to 81 are on the continent of Europe, and number 82 is in Great Britain.—Insurance, interest, depreciation of value of plant, charges for freight of product to place of free delivery, and royalty to owners of the land are not included, but royalty to the state, when paid, is included under taxes.)

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
1	851,935	\$1,827	\$5,512	\$250	\$28,421
2	7,640	1,800	783	88	8,481
3	18,438	250	1,736	100	19,824
4	48,909	2,100	2,822	320	54,151
5	77,258	2,240	2,467	400	82,365
6	72,119	5,480	729	100	78,428
7	28,272	1,850	2,400	185	32,707
8	4,564	100	200		4,864
9	2,677		208		2,885
10	1,425	238	248	00	1,911
11	50,485	6,080	33,803	1,384	91,652
12	66,544	2,720	24,861	2,510	96,635
13	30,514	3,580	34,801	1,410	70,305
14	12,370	371	11,941	73	24,755
15	30,904	2,500	12,731	1,220	47,355
16	16,842	1,200	6,940	141	25,123
17	20,040	2,300	6,002	1,100	29,442
18	36,483	4,080	85,779	2,500	128,842
19	41,805	800	28,426	1,384	72,415
20	408,000	18,200	90,021	14,000	530,221
21	627,020	7,500	373,334	21,420	1,029,274
22	374,491	14,410	146,780	20,424	555,905
23	18,784	2,000	2,800	430	24,014
24	48,408	2,100	13,361	385	64,254
25	41,130	7,900	8,737	1,300	59,067
26	104,384	6,845	58,777	4,000	173,906
27	44,761	1,720	39,900	800	86,181
28	140,471	3,080	54,487	2,400	200,438
29	704,823	12,331	285,362	21,360	1,023,876
30	28,210	4,500	10,202	4,300	47,212
31	190,308	10,700	61,473	4,700	267,181
32	378,200	30,530	129,779	16,777	555,286
33	194,134	4,440	67,773	4,700	269,047
34	202,800	17,003	187,874	18,800	525,477
35	10,750	1,150	4,900	600	17,400
36	20,425	213	4,631	120	25,389
37	49,673	779	16,537	700	67,689
38	45,670	548	2,160	800	59,178
39	544,056	22,650	150,050	4,000	720,756
40	204,301	19,800	91,300	4,000	319,401
41	71,337	4,400	13,873	1,300	90,910
42	150,000	21,000	31,100	4,000	206,100
43	28,741	2,600	11,040	110	42,491
44	64,520	600	7,800		72,920
45	72,320	2,573	30,710		105,603
46	47,701	8,500	60,700	800	117,701
47	20,000	1,000	7,000		28,000
48	14,500	2,500	7,000		24,000
49	27,100	400	7,000		34,500
50	10,407	2,700	7,000		20,107
51	3,000	150	7,000		10,150
52	1,413				1,413
53	12,400	800	7,000		20,200
54	21,100	2,420	7,000		29,520
55	24,000	1,700	7,000		32,700
56	4,300	1,000	7,000		12,300
57	22,000	1,400	7,000		30,400
58	66,400	1,000	7,000		74,400
59	3,000	600	7,000		10,600
60	11,700	240	7,000		20,940
61	1,300	200	7,000		8,500
62	6,000	200	7,000		13,200
63	1,000	200	7,000		8,200
64	27,500	2,000	7,000		36,500
65	41,000	1,000	7,000		49,000
66	40,000	2,000	7,000		49,000
67	17,000	1,000	7,000		25,000
68	20,000	2,000	7,000		29,000

* The high total cost is due to the present opening of the mine.

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES
IN VARIOUS STATES—Continued.

C.—GENERAL STATEMENT OF COST FOR THE PERIOD—Concluded.

[Establishments numbers 1 to 73 are in the United States; numbers 73 to 91 are on the continent of Europe; and number 92 is in Great Britain.—Insurance, interest, depreciation of value of plant, charges for freight of product to place of free delivery, and royalty to owners of the soil are not included, but royalty to the state, when paid, is included under taxes.]

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
71	\$101, 781	85, 444	\$51, 021	8254	\$158, 500
72	143, 201	5, 044	79, 483	2, 004	230, 331
73	(a)	(a)	(a)	(a)	(a)
74	(a)	(a)	(a)	(a)	(a)
75	19, 017	1, 877	5, 434	257	26, 085
76	44, 048	2, 330	16, 584	1, 754	65, 214
77	2, 403	190	179	107	2, 879
78	120, 124	4, 004	43, 558	2, 570	171, 936
79	42, 008	633	12, 503	1, 318	56, 461
80	14, 150	465	2, 461	204	17, 250
81	37, 784	b 15, 401	5, 123	c 81, 508	c 139, 834
82	7, 238	b 1, 638	897	c 8, 728	c 14, 561
83	22, 767	b 7, 232	2, 383	c 24, 835	c 70, 717
84	5, 367	b 787	558	c 4, 237	c 10, 904
85	13, 073	b 2, 550	1, 614	c 13, 542	c 20, 780
86	(a)	(a)	(a)	(a)	(a)
87	(a)	(a)	(a)	(a)	(a)
88	(a)	(a)	(a)	(a)	(a)
89	183, 570	4, 005	28, 890	c 4, 513	c 171, 043
90	d 35, 121	(d)	4, 006	c 300	c 40, 117
91	d 63, 518	(d)	17, 412	c 3, 738	c 84, 668
92	238, 507	6, 570	101, 528	4, 344	350, 949

a Not reported.

b Including office supplies.

c Including royalty to state.

d The expenditures for officials and clerks are inseparably combined with those for labor.

TABLE X. COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES IN VARIOUS STATES—Continued.

D.—ELEMENTS OF COST IN ONE TON OF 2,240 POUNDS.

[Establishment numbers 1 to 77 are in the United States, numbers 78 to 91 are on the continent of Europe and number 92 is in Great Britain.—Insurance, interest, depreciation of value of plant, charges for freight of product to place of free delivery, and royalty to owners of the mine are not included, but royalty to the state, when paid, is included under taxes.]

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
1	\$0.258	\$0.021	\$0.059	\$0.003	\$0.341
2	.401	.052	.040	.005	.498
3	.510	.006	.053	.003	.572
4	.545	.023	.039	.004	.611
5	.560	.017	.025	.003	.605
6	1.121	.085	.011	.001	1.228
7	.784	.051	.075	.003	.913
8	1.226	.027	.082		1.335
9	.684		.078		.762
10	.450	.078	.075	.018	.621
11	1.132	.078	.041	.004	1.255
12	.070	.032	.382	.041	1.413
13	.542	.049	.474	.019	1.085
14	1.001	.030	.080	.063	1.174
15	1.138	.071	.381	.038	1.626
16	.870	.089	.402	.020	1.381
17	1.106	.071	.248	.037	1.462
18	.827	.036	.748	.075	1.686
19	1.108	.012	.357	.044	1.521
20	1.807	.045	.480	.070	2.392
21	.808	.010	.406	.028	1.252
22	1.180	.045	.451	.005	1.681
23	1.573	.189	.373	.040	2.175
24	1.615	.071	.517	.032	2.235
25	2.054	.000	.414	.003	2.471
26	.897	.033	.308	.022	1.259
27	.801	.024	.578	.012	1.415
28	.680	.023	.267	.018	1.088
29	1.323	.023	.355	.037	1.738
30	1.312	.200	.475	.042	2.030
31	1.382	.092	.289	.070	1.833
32	1.520	.082	.452	.057	2.111
33	1.397	.032	.482	.060	1.971
34	1.673	.041	.837	.078	2.629
35	.806	.006	.261	.026	1.100
36	1.441	.004	.308	.030	1.783
37	.830	.014	.305	.020	1.169
38	1.103	.017	.114	.020	1.254
39	.702	.030	.174	.013	1.020
40	.883	.010	.320	.010	1.223
41	.516	.105	.307	.020	1.048
42	1.124	.108	.428	.043	1.703
43	.729	.079	.252	.002	1.062
44	0.073	.100	.620		0.793
45	.878	.082	.385		1.345
46	.007	.004	.127	.042	0.179
47	1.008	.120	.151	.006	1.285
48	1.329	.206	.111	.003	1.649
49	1.000	.300	.316		1.616
50	1.300	.010	.620		1.930
51	1.441		.011	.001	1.443
52	.700	.110	.011	.001	0.822
53	.700	.110	.011	.001	0.822
54	.700	.110	.011	.001	0.822
55	.700	.110	.011	.001	0.822
56	.700	.110	.011	.001	0.822
57	.700	.110	.011	.001	0.822
58	.700	.110	.011	.001	0.822
59	.700	.110	.011	.001	0.822
60	.700	.110	.011	.001	0.822
61	.700	.110	.011	.001	0.822
62	.700	.110	.011	.001	0.822
63	.700	.110	.011	.001	0.822
64	.700	.110	.011	.001	0.822
65	.700	.110	.011	.001	0.822
66	.700	.110	.011	.001	0.822
67	.700	.110	.011	.001	0.822
68	.700	.110	.011	.001	0.822
69	.700	.110	.011	.001	0.822
70	.700	.110	.011	.001	0.822
71	.700	.110	.011	.001	0.822
72	.700	.110	.011	.001	0.822
73	.700	.110	.011	.001	0.822
74	.700	.110	.011	.001	0.822
75	.700	.110	.011	.001	0.822
76	.700	.110	.011	.001	0.822
77	.700	.110	.011	.001	0.822

NOTE.—The above figures are in the United States, excepting in the column.

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES
IN VARIOUS STATES—Continued.

D.—ELEMENTS OF COST IN ONE TON OF 2,240 POUNDS—Concluded.

[Establishments numbers 1 to 72 are in the United States; numbers 73 to 91 are on the continent of Europe; and number 92 is in Great Britain.—Insurance, interest, depreciation of value of plant, charges for freight of product to place of free delivery, and royalty to owners of the soil are not included, but royalty to the state, when paid, is included under taxes.]

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
71	\$1.974	\$0.106	\$0.990	\$0.005	\$3.075
72 .....	.655	.023	.363	.012	1.053
73 .....	.845	.023	.375	a.173	a 1.416
74 .....	.296	.023	.045	a.088	a .452
75 .....	.600	.043	.172	.008	.823
76	1.274	.067	.478	.050	1.864
77	1.938	.153	.144	.086	2.321
78	1.280	.050	.464	.038	1.832
79	1.614	.024	.480	.051	2.169
80	1.439	.041	.250	.021	1.751
81 .....	.445	b.182	.060	a.961	a 1.648
82 .....	.800	b.180	.099	a.958	a 2.037
83 .....	.571	b.181	.060	a.961	a 1.773
84	1.210	b.177	.134	a.956	a 2.477
85 .....	.927	b.181	.114	a.960	a 2.182
86 .....	.180	.012	.023	a.059	a.274
87 .....	.346	.023	.057	a.142	a.568
88 .....	.487	.023	.059	a.059	a.628
89 .....	.376	.011	.081	a.013	a.481
90	a.549	(a)	.072	a.006	a.627
91	a.259	(a)	.071	a.015	a.345
92 .....	.389	.011	.106	.007	.573

a Including royalty to the state.

b Including office supplies.

c The expenditures for officials and clerks are inseparably combined with those for labor.

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES
IN VARIOUS STATES—Continued.

E.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUNDS—Concluded.

[Establishments numbers 1 to 72 are in the United States; numbers 73 to 91 are on the continent of Europe; and number 92 is in Great Britain.—This table is based on the preceding one and to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader is referred to that table for such information as they furnish.]

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
72	62.20	2.19	34.47	1.14	100
73	59.68	1.62	26.48	12.22	100
74	65.49	5.09	9.95	19.47	100
75	72.90	5.23	20.90	.97	100
76	64.35	3.50	25.38	2.68	100
77	83.59	6.59	6.20	3.71	100
78	60.87	2.73	25.33	2.07	100
79	74.41	1.11	23.13	2.35	100
80	82.18	2.34	14.28	1.20	100
81	27.00	11.05	3.64	58.31	100
82	39.27	8.84	4.86	47.03	100
83	32.21	10.21	3.38	54.20	100
84	44.83	7.15	5.41	28.59	100
85	42.48	8.30	5.22	44.00	100
86	65.69	4.38	8.40	21.53	100
87	69.03	4.05	10.03	25.00	100
88	77.55	3.66	9.49	9.39	100
89	78.17	2.29	16.84	2.70	100
90	87.56	.....	11.48	.96	100
91	75.07	.....	20.58	4.35	100
92	67.89	1.92	28.97	1.22	100

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES IN VARIOUS STATES—Continued.

E.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 72 are in the United States; numbers 73 to 91 are on the continent of Europe; and number 92 is in Great Britain.—This table is based on the preceding one and to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader is referred to that table for such information as they furnish.]

Establishment number	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
1	87.05	3.29	8.20	.67	100
2	86.82	10.44	8.68	1.91	100
3	89.85	1.40	8.33	.52	100
4	86.30	3.76	—	.06	100
5	92.54	2.81	4.13	.06	100
6	92.10	8.02	.00	.00	100
7	85.87	5.50	8.21	.33	100
8	91.80	2.01	8.10	—	100
9	90.80	—	10.00	—	100
10	73.40	12.50	12.00	2.90	100
11	80.11	4.08	33.47	2.34	100
12	68.79	2.70	25.64	2.90	100
13	84.04	4.82	43.00	1.73	100
14	48.80	1.40	40.80	8.00	100
15	70.73	4.42	22.48	2.37	100
16	68.63	4.71	—	1.30	100
17	75.05	4.06	16.00	2.63	100
18	48.35	2.12	44.11	4.43	100
19	72.85	.70	23.47	2.68	100
20	75.52	3.36	18.31	2.79	100
21	64.45	.80	32.51	2.24	100
22	60.41	2.50	25.98	8.00	100
23	72.31	8.03	17.23	1.64	100
24	72.30	3.18	22.13	1.43	100
25	78.10	3.78	15.74	2.40	100
26	71.30	2.62	24.32	1.75	100
27	60.20	1.50	37.41	.00	100
28	62.71	2.10	32.50	1.69	100
29	74.66	1.34	20.06	—	100
30	64.38	10.25	23.31	2.06	100
31	72.62	4.83	18.67	2.06	100
32	68.71	4.79	28.53	2.07	100
33	70.77	1.62	34.42	2.19	100
34	67.63	1.77	27.04	2.30	100
35	61.50	7.18	26.40	2.83	100
36	81.18	.44	16.77	1.64	100
37	73.29	1.10	24.02	1.50	100
38	81.03	1.25	16.25	1.47	100
39	73.29	4.40	21.34	.97	100
40	71.43	4.71	23.06	.80	100
41	49.00	17.80	29.75	2.52	100
42	64.11	10.04	23.53	2.32	100
43	67.42	6.55	25.84	.19	100
44	66.70	4.07	10.17	—	100
45	60.00	2.38	26.62	—	100
46	50.33	4.50	33.29	8.79	100
47	60.47	6.81	6.66	.00	100
48	60.65	10.91	8.03	.21	100
49	92.34	1.52	6.02	.11	100
50	72.17	12.78	12.13	1.02	100
51	73.50	1.00	26.52	—	100
52	81.20	—	17.61	1.12	100
53	78.31	5.30	15.40	.90	100
54	79.43	9.16	8.01	2.61	100
55	77.35	5.39	15.72	1.54	100
56	73.00	5.51	20.45	.35	100
57	81.00	5.36	2.05	—	100
58	85.12	10.53	4.18	.17	100
59	70.77	—	18.76	.45	100
60	70.58	4.68	17.50	1.00	100
61	72.70	5.51	20.21	.68	100
62	87.12	5.15	7.73	—	100
63	60.62	3.23	8.57	.55	100
64	60.17	5.00	24.24	.00	100
65	84.19	—	5.20	.61	100
66	64.17	1.02	23.03	.52	100
67	—	6.76	18.23	.77	100
68	73.40	6.31	12.41	1.70	100
69	67.00	5.00	27.11	—	100
70	—	11.00	15.11	.46	100
71	64.30	2.46	28.19	.10	100

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES
IN VARIOUS STATES—Continued.

E.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUNDS—Concluded.

[Establishments numbers 1 to 72 are in the United States; numbers 73 to 81 are on the continent of Europe; and number 82 is in Great Britain.—This table is based on the preceding one and to avoid duplicating the notes, which would be the same in substance, they are here omitted, and the reader is referred to that table for such information as they furnish.]

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
72	63.30	2.19	24.47	1.14	100
73	52.63	1.32	29.48	15.57	100
74	65.48	5.09	9.86	19.47	100
75	72.90	4.21	30.96	.87	100
76	64.38	1.50	23.38	2.68	100
77	63.58	4.50	8.20	2.71	100
78	60.87	1.72	23.33	2.07	100
79	74.41	1.11	22.13	2.35	100
80	82.16	2.24	14.28	1.20	100
81	37.00	11.05	3.64	58.31	100
82	39.27	8.84	4.86	47.03	100
83	22.21	10.21	3.28	64.20	100
84	44.85	7.15	8.41	38.59	100
85	42.48	8.80	5.22	44.00	100
86	65.09	4.28	8.40	21.53	100
87	69.02	4.05	10.08	25.00	100
88	77.56	3.08	9.40	9.39	100
89	79.17	2.29	16.84	2.70	100
90	87.56	.....	11.48	.96	100
91	75.07	.....	20.58	4.35	100
92	67.89	1.92	22.97	1.22	100

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES
IN VARIOUS STATES—Continued.

F.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS.

(Establishments numbers 1 to 72 are in the United States; numbers 73 to 91 are on the continent of Europe; and number 92 is in Great Britain.)

Establishment number.	Additional cost.				Total.
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	
1					
2			\$1,000		\$1,000
3	\$50				50
4	30		1,528		1,578
5	73	(a)	300		373
6	108		5,000		5,108
7	180		3,000		3,180
8					
9				\$404	404
10			100		100
11	677	\$7,812	9,740		18,489
12	731		5,322	17,258	23,311
13	575	2,350	654		3,579
14	300	729			1,029
15	197	5,179	1,011	13,532	19,919
16	33	721	641		1,395
17	275	2,740	2,590	13,040	18,645
18	600	5,972			6,572
19	400	383	1,711	29,500	31,994
20	2,830	21,510	10,057	80,020	114,417
21	2,478	11,604	40,277	201,243	255,502
22	1,748		72,814		74,562
23	172		533		705
24	150	2,447			2,597
25	180			9,511	9,691
26	670	13,750	12,980	55,630	82,930
27	300	500	2,500	12,650	15,950
28	630	1,008	12,783	63,815	77,236
29	2,014	140,000	52,424	220,380	414,827
30	550			10,750	11,300
31	1,944	1,340	10,000	34,800	48,084
32	3,449				3,449
33			9,631		9,631
34	720				720
35	67	2,450	949	4,745	8,211
36	202	7,620	2,672	8,391	18,885
37	533	8,400	8,331	21,326	38,590
38	414	6,271	4,140	13,247	24,072
39	1,500		116,912	193,580	311,992
40	2,700	6,356	14,714	101,834	125,604
41				22,731	22,731
42					
43	80	14,223	484		14,787
44		315		345	660
45	400	7,000			7,400
46	2,800		22,412		25,212
47	185	575		500	1,260
48				1,830	1,830
49				1,280	1,280
50		500			500
51				4,109	4,109
52	(a)	175	(a)	500	675
53				1,800	1,800
54					
55					
56	18	509	805	1,756	2,978
57		(a)	(a)	1,646	d 1,580
58		1,500	1,000	10,753	13,253
59	60	(a)	762		812
60	2,000	2,000		3,085	7,085
61	40	600	281	700	1,621
62					
63	22	625			647
64	20	450	(a)	1,925	e 2,395
65			(a)	1,802	e 1,802

a Not reported.

b Not including interest.

c Not including insurance and depreciation.

d Not including interest and depreciation.

e Not including depreciation.

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES IN VARIOUS STATES—Continued.

F.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS—Concluded.

[Establishments numbers 1 to 72 are in the United States; numbers 73 to 91 are on the continent of Europe; and number 92 is in Great Britain.]

Establishment number.	Additional cost.				
	Insurance.	Interest.	Deprecia- tion of value of plant.	Royalty to owners of soil.	Total.
66		\$800	\$6,000		\$6,800
67	(a)				(a)
68			(a)		(a)
69		(a)	(a)	\$10,064	b 10,064
70					
71		7,010		25,776	32,786
72	\$803	22,750	13,124	13,124	c 49,861
73	(a)			(a)	(a)
74	(a)			(a)	(a)
75				4,975	4,975
76					
77					
78	70				70
79	40		3,045		3,085
80					
81	558	(a)	862		c 1,420
82	87	(a)	93		c 180
83	268	(a)	405		c 671
84	26	(a)	45		c 71
85	92	(a)	143		c 235
86	(a)				(a)
87	(a)				(a)
88	(a)				(a)
89				90,250	90,250
90				6,500	6,500
91					
92				73,074	73,074

a Not reported. b Not including interest and depreciation. c Not including interest.

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES IN VARIOUS STATES—Continued.

G.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 72 are in the United States; numbers 73 to 91 are on the continent of Europe; and number 92 is in Great Britain.]

Establishment number.	Additional cost per ton.				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
1					
2					
3					
4					
5					
6					
7					
8					
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87					
88					
89					
90					
91					
92					

• Not including interest and depreciation.
• Not including depreciation.

TABLE X.—COST OF PRODUCTION OF IRON ORE AT VARIOUS MINES IN VARIOUS STATES—Concluded.

G.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS.—Concluded.

[Establishments numbers 1 to 72 are in the United States; numbers 73 to 91 are on the continent of Europe; and number 92 is in Great Britain.]

Establishment number.	Additional cost per ton.				
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	Total.
66 .....	.....	\$0. 006	\$0. 049	.....	\$0. 055
67	(a)	.....	.....	.....	(a)
68 .....	.....	.....	(a)	.....	(a)
69 .....	.....	(a)	(a)	\$0. 300	b. 300
70 .....	.....	.....	.....	.....	.....
71 .....	.....	. 136	.....	. 500	. 636
72	\$0. 004	. 104	. 000	. 080	. 228
73	(a)	.....	.....	. 019	c. 019
74	(a)	.....	.....	(a)	(a)
75 .....	.....	.....	.....	. 137	. 157
76 .....	.....	.....	.....	.....	.....
77 .....	.....	.....	.....	.....	.....
78 .....	. 001	.....	.....	.....	. 001
79 .....	. 002	.....	. 117	.....	. 119
80 .....	.....	.....	.....	.....	.....
81 .....	. 007	(a)	. 010	.....	d. 017
82 .....	. 006	(a)	. 010	.....	d. 016
83 .....	. 007	(a)	. 010	.....	d. 017
84 .....	. 006	(a)	. 010	.....	d. 016
85 .....	. 007	(a)	. 010	.....	d. 017
86	(a)	.....	.....	.....	(a)
87	(a)	.....	.....	.....	(a)
88	(a)	.....	.....	.....	(a)
89 .....	.....	.....	.....	. 254	. 254
90 .....	.....	.....	.....	. 102	. 102
91 .....	.....	.....	.....	.....	.....
92 .....	.....	.....	.....	. 119	. 119

a Not reported.

b Not including interest and depreciation.

c Not including insurance.

d Not including interest.

Summaries of the preceding tables on iron ore now follow. These show that for the 72 establishments of the United States the average cost of one ton of ore is \$1.482, with a possible addition of 33 cents for theoretical elements; for the 12 establishments of the continent of Europe it is \$1.108, with an additional theoretical cost of 14.3 cents; and for the single establishment of Great Britain it is 57.3 cents, with an additional theoretical cost of 11.9 cents.

SUMMARY OF COST OF IRON ORE IN SEVENTY-TWO ESTABLISHMENTS IN THE UNITED STATES.

[This summary is drawn from sub-tables A to G immediately preceding. The establishments covered are numbers 1 to 72, inclusive, being all the iron ore mines in the United States from which reports have been obtained. As may be seen, the periods covered are usually twelve months and are in the years 1888, 1889, and 1890.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 6,317,171.	Average cost of one.
Labor	\$6,565,418	\$1.030
Officials and clerks	311,082	.049
Supplies and repairs	2,264,320	.350
Taxes	219,665	.035
Total	9,360,485	1.482

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Forty-five establishments gave the amount paid for insurance. The aggregate of these makes the sum credited to this item below. Twenty-five reported that they had no insurance, and for two the agents of the Department failed to obtain a statement. Thirty-six establishments gave the amount paid for interest; the aggregate of these makes the sum below. Thirty-two reported that there was no expenditure for interest, and for four no statement was obtained. Thirty-eight establishments gave the amount charged to depreciation; the aggregate of these makes the sum below. Twenty-eight reported that nothing was charged to this item, and for six no statement was obtained. Thirty-eight gave the amount paid as royalty to the owners of the soil; the aggregate of these makes the sum below. Thirty-four reported that nothing was paid as royalty to the owners of the soil. The aggregates entered in the first column below are, of course, apportioned in the second column among the whole seventy-two establishments.]

Insurance	\$33,832	\$0.008
Interest	310,849	.049
Depreciation of value of plant	454,492	.072
Royalty paid to owners of the soil	1,284,098	.203
Total	2,083,271	.330

SUMMARY OF COST OF IRON ORE IN TWELVE ESTABLISHMENTS ON THE CONTINENT OF EUROPE.

[This summary is drawn from the preceding sub-tables A to G. The establishments covered are numbers 73 to 83, inclusive, and 89, being all the iron ore mines on the continent of Europe from which full reports were obtained. As may be seen, the periods covered are usually twelve months, and are in the years 1887, 1888, and 1889. The large cost of taxes reported for these twelve establishments is accounted for by the fact that in six of them an item of royalty paid to the state is included under the head of taxes. In the six establishments the total amount paid for taxes (including said royalty) is \$150,861, while in the six establishments in which such royalty is not paid the total amount is only \$7,210.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 703,401.	Average cost of one.
Labor	\$462,236	\$0.655
Officials and clerks	41,315	.059
Supplies and repairs	120,219	.170
Taxes	158,071	.224
Total	781,841	1.108

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[Seven establishments gave the amount paid for insurance; the aggregate of these makes the sum credited to this item below. Five reported that they had no insurance. Seven establishments reported that there was no expenditure for interest, and for five the agents of the Department failed to obtain a statement. Six establishments gave the amount charged to depreciation; the aggregate of these makes the sum below. Six reported that nothing was charged to this item. Two establishments gave the amount paid as royalty to the owners of the soil; the aggregate of these makes the sum below. Ten reported that nothing was paid as royalty to the owners of the soil. The aggregates entered in the first column below are, of course, apportioned in the second column among the whole twelve establishments.]

Insurance	\$1,100	\$0.002
Interest		
Depreciation of value of plant	4,393	.006
Royalty paid to owners of the soil	95,225	.135
Total	100,927	.143

SUMMARY OF COST OF IRON ORE IN ONE ESTABLISHMENT IN GREAT BRITAIN.

[This summary is drawn is from the preceding sub-tables A to G. The establishment is number 92, being the only iron ore mine in Great Britain from which a report was obtained. As may be seen, the period covered is six months in the year 1889.]

Elements of cost.	Tons of 2,240 pounds.	
	Cost of 612,104.	Average cost of one.
Labor	\$238,507	\$0.389
Officials and clerks	6,570	.011
Supplies and repairs.....	101,528	.168
Taxes	4,344	.007
Total	350,949	.573

SUMMARY OF COST OF THEORETICAL ELEMENTS IN THE ABOVE.

[This establishment reported that it had no insurance, that there was no expenditure for interest, and that nothing was charged to depreciation. It gave the amount paid as royalty to the owners of the soil, which is the sum credited to this item below.]

Insurance .....	.....	.....
Interest .....	.....	.....
Depreciation of value of plant .....	.....	.....
Royalty paid to owners of the soil.....	\$73,074	\$0.119
Total	73,074	.119

LIMESTONE.

LIMESTONE.

The titles of the table and sub-tables relating to the cost of production of limestone are as follows:

TABLE XI.—Cost of Production of Limestone at Various Quarries in Various States.

- A.—Period covered and quantity of product.
- B.—General statement of cost for the period.
- C.—Elements of cost in one ton of 2,240 pounds.
- D.—Per cent. of each element of cost in one ton of 2,240 pounds.
- E.—Additional cost of certain theoretical elements.
- F.—Additional cost of certain theoretical elements in one ton of 2,240 pounds.

The table requires no particular analysis, the statements being brought out with sufficient clearness; the general plan is the same as for the preceding industries. No complete analyses of the limestone were furnished, but the percentage of carbonate of lime has been reported generally. In a few of the smaller establishments no charge was reported for administration, the work being very slight, and probably performed by the foreman, whose wages were charged under labor.

TABLE XI.—COST OF PRODUCTION OF LIMESTONE AT VARIOUS QUARRIES IN VARIOUS STATES.

A.—PERIOD COVERED AND QUANTITY OF PRODUCT.

Es- tab- lish- ment num- ber.	Locality.	Period covered.		Limestone quarried.		
		Terminal dates.	Days of running time.	Carbon- ate of lime (per cent.)	Tons of 2,240 pounds.	
					Total.	Per day.
1	United States.....	July 1, 1889, to Dec. 31, 1889	130	97.0	45,500	350
2	....do	Jan. 1, 1889, to Dec. 31, 1889	250	97.0	162,500	650
3	....do	Jan. 1, 1889, to Dec. 31, 1889	243	95.3	88,007	356
4	....do	Jan. 1, 1889, to Dec. 31, 1889	253	95.3	80,324	317
5	....do	Jan. 1, 1889, to Dec. 31, 1889	220	97.0	13,273	60
6	....do	Jan. 1, 1889, to Dec. 31, 1889	211	96.5	15,250	72
7	Great Britain	Mar. 28, 1889, to Sept. 28, 1889	(a)	(a)	21,344	(a)

a Not reported.

TABLE XL.—COST OF PRODUCTION OF LIMESTONE AT VARIOUS QUARRIES IN VARIOUS STATES—Continued.

B.—GENERAL STATEMENT OF COST FOR THE PERIOD.

[Establishments numbers 1 to 6 are in the United States; number 7 is in Great Britain.—Insurance, interest, depreciation of value of plant, charges for freight of product to place of free delivery, and royalty to the owners of the soil are not included.]

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
1	\$19,175	\$1,800	\$2,736	\$50	\$14,755
2	24,125	5,200	8,112	500	51,938
3	24,956	1,200	1,849		27,905
4	23,443	250	426		24,119
5	3,006		742	25	4,973
6	7,338		875	25	8,238
7	8,280		821		9,101

C.—ELEMENTS OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 6 are in the United States; number 7 is in Great Britain.—Insurance, interest, depreciation of value of plant, charges for freight of product to place of free delivery, and royalty to the owners of the soil are not included.]

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
1	\$8.224	\$0.039	\$0.000	\$0.001	\$8.264
2	.235	.032	.030	.000	.297
3	.309	.014	.019		.342
4	.319	.003	.005		.327
5	.204		.024	.002	.230
6	.481		.059	.001	.541
7	.380		.038		.418

D.—PER CENT. OF EACH ELEMENT OF COST IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 6 are in the United States; number 7 is in Great Britain.]

Establishment number.	Labor.	Officials and clerks.	Supplies and repairs.	Taxes.	Total.
1	88.18	12.04	12.92	.31	100
2	73.44	10.00	15.62	.94	100
3	88.72	4.38	5.92		100
4	97.55	.93	1.52		100
5	88.32		15.91	.87	100
6	89.07		10.74	.18	100
7	91.10		8.80		100

E.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS.

[Establishments numbers 1 to 6 are in the United States; number 7 is in Great Britain.]

Establishment number.	Additional cost.				Total.
	Insurance.	Interest.	Depreciation of value of plant.	Royalty to owners of soil.	
1					
2				\$2,000	\$2,000
3				4,400	4,400
4					
5					
6					
7				\$210	\$210

TABLE XI.—COST OF PRODUCTION OF LIMESTONE AT VARIOUS QUARRIES IN VARIOUS STATES—Concluded.

F.—ADDITIONAL COST OF CERTAIN THEORETICAL ELEMENTS IN ONE TON OF 2,240 POUNDS.

[Establishments numbers 1 to 6 are in the United States; number 7 is in Great Britain.]

Establishment number.	Additional cost per ton.				
	Insurance.	Interest.	Deprecia- tion of value of plant.	Royalty to owners of soil.	Total.
1
2
3	\$0.045	\$0.045
4056	.056
5
6
7057	.057

FREIGHTS.

The following freight rates are for pig iron, steel, etc., from various points of production in the United States to points and ports of delivery, and from ports in Great Britain to various ports in the United States. These rates have been gathered from official sources, but to what extent, under particular circumstances, rebates or deductions are granted, or whether granted at all, the Department has no knowledge.

As an illustration of the practical working of freight rates with reference to steel rails, the statements of the manager of one of the largest steel companies in the United States may be quoted. He said that the difference in cost of production of steel rails in Chicago, for instance, and in England would not exceed \$3.50 or \$4 per ton, and that the freight rate (\$5 per ton) from Chicago to New York offered a large protection to his company. This manager also prepared the following statement, showing the cost of transportation of steel rails per ton of 2,240 pounds from New York to San Francisco by water:

Lighterage	\$0.50
Insurance.....	.45
Three months' interest .....	.45
Freight by water	10.00
Total.....	11.40

The total expenses, then, of transportation from New York to San Francisco is \$11.40, while the latest rate quoted in the table further along (for October 1, 1889) from Chicago to San Francisco is \$17.92. It has, the same manager states, always been cheaper to ship rails from Chicago to New York at \$5 per ton, and then ship them from there to San Francisco, than to ship them directly from Chicago to San Francisco; or, in other words, it is cheaper to ship from Chicago to San Francisco via New York than it is to ship direct. The same gentleman

also prepared the following statements, based upon market values of rails in November or December, 1890.

Price of English rails, per ton, without tariff:	
At Liverpool.....	\$25.00
At New York	25.00
At Chicago	30.00
At San Francisco	25.00
Price of English rails, per ton, with tariff:	
At New York	39.00
At Chicago.....	44.00
At San Francisco	39.00
Price of Chicago rails per ton:	
At Chicago	30.00
At San Francisco	47.92

This gives English rails an advantage of \$8.92 over Chicago rails in the San Francisco market.

It was assumed by this manager, and he claimed to know, that during the greater part of the season ocean steamers and sailing vessels transport rails as ballast, free of charge, from Liverpool to New York or San Francisco. Others have often made this same statement, and it is given here for what it is worth.

In the following tables the lines by which shipments are made are given in the prefatory notes when known; when there is no statement the facts were not reported.

FREIGHT RATES FROM CHICAGO, ILLINOIS, TO POINTS SPECIFIED.

[The rates are by some one of the following lines: the Baltimore and Ohio railroad, the Chicago and Grand Trunk railway, the Illinois Central railroad, the Lake Shore and Michigan Southern railway, the Michigan Central railroad, the Pittsburgh, Cincinnati, Chicago and Saint Louis railway, the Pittsburgh, Fort Wayne and Chicago railway, the Union Pacific railway, the lines of the Chicago and Ohio river traffic association, the lines of the Joint Agents Texas traffic association, or by all lines.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland.....	Steel rails.....	January 1, 1888 ...	\$1.00
Do	Steel rails	January 9, 1888 ...	4.40
Do	Steel rails	March 5, 1888	4.40
Do	Steel rails	July 6, 1888	3.60
Do	Steel rails	July 30, 1888	4.40
Do	Steel rails	August 16, 1888 ...	4.40
Do	Steel rails	September 16, 1888.	4.40
Do	Steel rails	January 1, 1889 ...	4.40
Do	Steel rails	January 24, 1889 ..	4.40
Do	Steel rails	June 20, 1889	4.40
Do	Steel rails	July 8, 1889	3.40
Do	Steel rails	September 1, 1889 .	4.40
Do	Steel rails	September 16, 1889.	4.40
Boston, Massachusetts, and Port- land, Maine. }	Steel rails	January 1, 1888 ...	6.50
Do	Steel rails	January 9, 1888 ...	6.00
Do	Steel rails	March 5, 1888	6.00
Do	Steel rails	July 6, 1888	5.20
Do	Steel rails	July 30, 1888	6.00
Do	Steel rails	August 16, 1888 ...	6.00
Do	Steel rails	September 16, 1888.	6.00
Do	Steel rails	January 1, 1889 ..	6.00
Do	Steel rails	January 24, 1889 ..	6.00
Do	Steel rails	June 20, 1889	6.00
Do	Steel rails	July 8, 1889	5.00
Do	Steel rails	September 1, 1889 .	6.00
Do	Steel rails	September 16, 1889.	6.00

FREIGHT RATES FROM PITTSBURGH, PENNSYLVANIA, TO POINTS SPECIFIED.

[The rates are by some one of the following lines: the Pennsylvania railroad, the Pittsburgh, Fort Wayne and Chicago railway, the Pittsburgh and Lake Erie railroad, the Pittsburgh, Cincinnati and Saint Louis railway, Gray's iron (steamboat) line, or the lines of the Transcontinental association.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Pig iron	January 1, 1888....	\$2.40
Do	Pig iron	June 11, 1888.....	1.89
Do	Pig iron	January 1, 1889....	2.40
Do	Pig iron	June 27, 1889.....	1.89
Do	Pig iron	September 2, 1889..	2.40
Do	Pig iron	January 1, 1890....	2.40
Boston, Massachusetts	Pig iron	January 1, 1888....	3.60
Do	Pig iron	June 11, 1888.....	3.00
Do	Pig iron	August 4, 1888	3.20
Do	Pig iron	August 21, 1888 ...	3.00
Do	Pig iron	October 17, 1888...	3.40
Do	Pig iron	January 1, 1889....	3.60
Do	Pig iron	June 27, 1889.....	3.00
Do	Pig iron	September 2, 1889..	3.60
Do	Pig iron	January 11, 1890...	3.60
Cairo, Illinois	Rails.....	February 28, 1888 ..	a 4.20
Do	Rails.....	March 1, 1889	a 4.40
Chicago, Illinois.....	Pig iron	January 4, 1889....	2.50
Do	Pig iron	May 1, 1889	2.50
Do	Pig iron	September 16, 1889..	2.50
Do	Pig iron	September 24, 1889..	2.50
Do	Pig iron	November 18, 1889..	2.50
Do	Pig iron	July 11, 1890	2.50
Do	Steel rails.....	May 15, 1889	2.40
Do	Steel rails.....	June 8, 1889	2.20
Do	Steel rails.....	September 16, 1889..	2.40
Do	Steel rails.....	January 1, 1890....	2.75
Do	Steel rails.....	June 1, 1890	2.75
Cincinnati, Ohio.....	Pig iron	September 24, 1889..	2.00
Do	Pig iron	November 18, 1889..	2.00
Do	Steel rails.....	June 11, 1889.....	1.60
Do	Steel rails.....	May 15, 1889	1.62
Do	Steel rails.....	September 16, 1889..	1.62
Do	Steel rails.....	January 1, 1890....	b 1.80
East Saint Louis, Illinois.....	Pig iron	September 24, 1889..	3.00
Do	Pig iron	November 18, 1889..	3.00
Do	Steel rails.....	June 8, 1889	2.70
Do	Steel rails.....	September 16, 1889..	3.11
Do	Steel rails.....	January 1, 1890....	3.50
Mobile, Alabama	Rails.....	January 1, 1888....	7.60
New Orleans, Louisiana	Rails.....	January 1, 1888....	7.80
Do	Rails.....	1888.....	3.25
Do	Rails.....	January 28, 1889...	3.20
Do	Rails.....	1889.....	3.25
Do	Rails.....	1890.....	4.00
New York, New York.....	Pig iron	January 1, 1888....	3.00
Do	Pig iron	June 11, 1888.....	2.40
Do	Pig iron	January 1, 1889....	3.00
Do	Pig iron	June 27, 1889.....	2.40
Do	Pig iron	September 2, 1889..	3.00
Do	Pig iron	January 1, 1890....	3.00
Philadelphia, Pennsylvania.....	Pig iron	January 1, 1888....	2.60
Do	Pig iron	June 11, 1888.....	2.00
Do	Pig iron	January 1, 1889....	2.60
Do	Pig iron	June 27, 1889.....	2.00
Do	Pig iron	September 2, 1889..	2.60
Do	Pig iron	January 1, 1890....	2.60
Portland, Maine	Pig iron	January 1, 1888....	3.60
Do	Pig iron	June 11, 1888.....	3.00
Do	Pig iron	August 4, 1888	3.20
Do	Pig iron	August 21, 1888 ...	3.00
Do	Pig iron	October 17, 1888...	3.40
Do	Pig iron	January 1, 1889....	3.60
Do	Pig iron	June 27, 1889.....	3.00
Do	Pig iron	July 11, 1889	3.60
Do	Pig iron	July 22, 1889	3.00
Do	Pig iron	September 2, 1889..	3.60
Do	Pig iron	January 1, 1890....	3.60
Portland, Oregon, and San Fran- cisco, California. }	Pig iron	January 16, 1888 ..	22.18
Do	Pig iron	March 6, 1888	22.18
Do	Pig iron	September 1, 1888 ..	22.40
Do	Pig iron	January 1, 1889....	25.76
Do	Pig iron	October 1, 1889....	25.76

a On shipments for Galveston, Texas.

b By Pittsburgh and Lake Erie railroad, to apply on shipments for points beyond Cincinnati, Ohio.

FREIGHT RATES FROM CHICAGO, ILLINOIS, TO POINTS SPECIFIED—Concluded.

[These are rates stated by shippers as having been actually paid; the dates when or lines by which shipments were made were not reported.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
New York, New York	Steel rails .....	.....	\$2.00
Omaha, Nebraska	Steel rails .....	.....	2.00
Philadelphia, Pennsylvania	Steel rails .....	.....	4.25
Pittsburgh, Pennsylvania	Steel rails .....	.....	2.75
Portland, Maine	Steel rails .....	.....	6.00
Portland, Oregon	Steel rails .....	.....	17.92
San Francisco, California	Steel rails .....	.....	17.92
Saint Louis, Missouri	Steel rails .....	.....	1.25
Savannah, Georgia	Steel rails .....	.....	5.75

FREIGHT RATES FROM SCRANTON, PENNSYLVANIA, TO POINTS SPECIFIED.

[The rates are by some one of the following lines: the Central railroad of New Jersey, the Delaware, Lackawanna and Western railroad, or lines of the Transcontinental association.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Rails	April 12, 1889	\$2.00
Chicago, Illinois	Rails	July 25, 1887	4.00
Do	Steel rails	September 28, 1887	4.00
Do	Rails	May 16, 1888	4.50
Do	Rails	June 12, 1889	3.61
Do	Steel rails	October 19, 1889	3.60
Do	Steel rails	October 20, 1889	3.61
Do	Steel rails	January 2, 1890	3.00
Do	Steel rails	May 1, 1890	4.00
Do	Steel rails	June 2, 1890	2.55
Do	Steel rails	June 14, 1890	2.65
Do	Steel rails	July 5, 1890	3.00
Do	Steel rails	July 8, 1890	3.00
Do	Steel rails	September 23, 1890	3.75
Cincinnati, Ohio	Steel rails	September 3, 1889	3.09
Do	Steel rails	January 15, 1890	3.14
Do	Steel rails	April 26, 1890	3.13
Do	Rails	May 1, 1890	3.40
East Saint Louis, Illinois	Rails	June 12, 1889	4.31
Do	Rails	May 1, 1890	4.60
Galveston, Texas (a)	Rails	January 22, 1889	1.00
New York, New York	Rails	May 12, 1887	2.00
Do	Rails	September 15, 1887	2.00
Do	Rails	January 20, 1888	2.00
Philadelphia, Pennsylvania	Rails	August 22, 1887	2.36
Do	Rails	March 8, 1888	2.26
Do	Rails	April 16, 1889	1.85
Portland, Oregon, and San Francisco, California. {	Pig iron	January 16, 1888	24.64
Do	Pig iron	September 1, 1888	22.40
Do	Pig iron	January 1, 1889	26.88
Do	Pig iron	October 1, 1889	26.88
Do	Pig iron	January 18, 1890	26.88
Do	Steel rails	March 6, 1888	24.64
Do	Steel rails	September 1, 1888	23.40
Do	Steel rails	January 1, 1889	20.16
Do	Steel rails	October 1, 1889	20.16
Do	Steel rails	January 18, 1890	20.16

a Via New York and water.

FREIGHT RATES FROM PITTSBURGH, PENNSYLVANIA, TO PORTS SPECIFIED.

[The rates are by some one of the following lines: the Pennsylvania railroad, the Pittsburgh, Fort Wayne and Chicago railway, the Pittsburgh and Lake Erie railroad, the Pittsburgh, Cincinnati and Saint Louis railway, Gray's Iron (steamboat) line, or the lines of the Transcontinental association.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland.....	Pig iron.....	January 1, 1888.....	\$2.40
Do.....	Pig iron.....	June 11, 1888.....	1.80
Do.....	Pig iron.....	January 1, 1889.....	2.40
Do.....	Pig iron.....	June 27, 1889.....	1.80
Do.....	Pig iron.....	September 2, 1889.....	2.40
Do.....	Pig iron.....	January 1, 1890.....	2.40
Boston, Massachusetts.....	Pig iron.....	January 1, 1888.....	2.00
Do.....	Pig iron.....	June 11, 1888.....	3.00
Do.....	Pig iron.....	August 4, 1888.....	3.20
Do.....	Pig iron.....	August 21, 1888.....	2.00
Do.....	Pig iron.....	October 17, 1888.....	3.40
Do.....	Pig iron.....	January 1, 1889.....	3.00
Do.....	Pig iron.....	June 27, 1889.....	3.00
Do.....	Pig iron.....	September 2, 1889.....	3.60
Do.....	Pig iron.....	January 11, 1890.....	2.60
Calco, Illinois.....	Rails.....	February 28, 1888.....	\$ 4.20
Do.....	Rails.....	March 1, 1889.....	\$ 4.40
Chicago, Illinois.....	Pig iron.....	January 4, 1888.....	2.50
Do.....	Pig iron.....	May 1, 1889.....	2.50
Do.....	Pig iron.....	September 16, 1889.....	2.50
Do.....	Pig iron.....	September 24, 1889.....	2.50
Do.....	Pig iron.....	November 12, 1889.....	2.60
Do.....	Pig iron.....	July 11, 1890.....	2.50
Do.....	Steel rails.....	May 15, 1889.....	2.40
Do.....	Steel rails.....	June 8, 1889.....	2.20
Do.....	Steel rails.....	September 13, 1889.....	2.40
Do.....	Steel rails.....	January 1, 1890.....	2.75
Do.....	Steel rails.....	June 1, 1890.....	2.75
Cincinnati, Ohio.....	Pig iron.....	September 24, 1889.....	2.00
Do.....	Pig iron.....	November 18, 1889.....	2.00
Do.....	Steel rails.....	June 11, 1889.....	1.00
Do.....	Steel rails.....	May 15, 1889.....	1.02
Do.....	Steel rails.....	September 13, 1889.....	1.62
Do.....	Steel rails.....	January 1, 1890.....	\$ 1.90
East Saint Louis, Illinois.....	Pig iron.....	September 24, 1889.....	3.00
Do.....	Pig iron.....	November 18, 1889.....	3.00
Do.....	Steel rails.....	June 8, 1889.....	2.75
Do.....	Steel rails.....	September 13, 1889.....	2.11
Do.....	Steel rails.....	January 1, 1890.....	3.50
Mobile, Alabama.....	Rails.....	January 1, 1888.....	7.00
New Orleans, Louisiana.....	Rails.....	January 1, 1888.....	7.00
Do.....	Rails.....	1888.....	3.25
Do.....	Rails.....	January 23, 1889.....	3.20
Do.....	Rails.....	1889.....	3.25
Do.....	Rails.....	1890.....	6.00
New York, New York.....	Pig iron.....	January 1, 1888.....	3.00
Do.....	Pig iron.....	June 11, 1888.....	2.40
Do.....	Pig iron.....	January 1, 1889.....	3.00
Do.....	Pig iron.....	June 27, 1889.....	2.40
Do.....	Pig iron.....	September 2, 1889.....	3.00
Do.....	Pig iron.....	January 1, 1890.....	3.00
Philadelphia, Pennsylvania.....	Pig iron.....	January 1, 1888.....	2.00
Do.....	Pig iron.....	June 11, 1888.....	2.00
Do.....	Pig iron.....	January 1, 1889.....	2.00
Do.....	Pig iron.....	June 27, 1889.....	2.00
Do.....	Pig iron.....	September 2, 1889.....	2.00
Do.....	Pig iron.....	January 1, 1890.....	2.00
Portland, Maine.....	Pig iron.....	January 1, 1888.....	3.00
Do.....	Pig iron.....	June 11, 1888.....	3.00
Do.....	Pig iron.....	August 4, 1888.....	3.20
Do.....	Pig iron.....	August 21, 1888.....	3.00
Do.....	Pig iron.....	October 17, 1888.....	3.40
Do.....	Pig iron.....	January 1, 1889.....	3.00
Do.....	Pig iron.....	June 27, 1889.....	3.00
Do.....	Pig iron.....	July 11, 1889.....	3.00
Do.....	Pig iron.....	July 22, 1889.....	3.00
Do.....	Pig iron.....	September 2, 1889.....	3.00
Do.....	Pig iron.....	January 1, 1890.....	3.00
Portland, Oregon, and San Francisco, California.....	Pig iron.....	January 16, 1888.....	\$2.18
Do.....	Pig iron.....	March 4, 1888.....	\$2.18
Do.....	Pig iron.....	September 1, 1888.....	\$2.40
Do.....	Pig iron.....	January 1, 1889.....	\$2.78
Do.....	Pig iron.....	October 1, 1889.....	\$2.78

a On shipments for Galveston, Texas.

b By Pittsburgh and Lake Erie railroad, to apply on shipments for points beyond Cincinnati, Ohio.

FREIGHT RATES FROM PITTSBURGH, PENNSYLVANIA, TO POINTS SPECIFIED—Continued.

[The rates are by some one of the following lines: the Pennsylvania railroad, the Pittsburgh, Fort Wayne and Chicago railway, the Pittsburgh and Lake Erie railroad, the Pittsburgh, Cincinnati and Saint Louis railway, Gray's iron (steamboat) line, or the lines of the Transcontinental association.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Portland, Oregon, and San Francisco, California.	Pig iron	June 15, 1899	\$25.75
Do	Steel rails	January 16, 1899	22.15
Do	Steel rails	March 8, 1899	22.15
Do	Steel rails	September 1, 1899	22.49
Do	Steel rails	January 1, 1899	19.04
Do	Steel rails	October 1, 1899	19.04
Do	Steel rails	June 15, 1899	19.04
Savannah, Georgia (s)	Steel rails	January 1, 1899	4.40

a Via sea from Baltimore, Maryland.

FREIGHT RATES FROM BESSEMER, PENNSYLVANIA, TO POINTS SPECIFIED.

[The rates are by the Pennsylvania railroad.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Steel rails	January 1, 1899	\$1.50
Do	Steel rails	January 1, 1899	1.50
Boston, Massachusetts	Steel rails	January 1, 1899	1.60
Do	Steel rails	August 2, 1899	2.20
Do	Steel rails	October 9, 1899	2.60
Do	Steel rails	January 1, 1899	2.60
Do	Steel rails	June 27, 1899	2.00
Do	Steel rails	September 2, 1899	2.50
Jersey City, New Jersey	Steel rails	January 1, 1899	2.17
Do	Steel rails	January 1, 1899	2.17
Philadelphia, Pennsylvania	Steel rails	January 1, 1899	1.79
Do	Steel rails	January 1, 1899	1.79
Portland, Maine	Steel rails	January 1, 1899	2.60
Do	Steel rails	August 6, 1899	2.20
Do	Steel rails	October 9, 1899	2.50
Do	Steel rails	January 1, 1899	2.50
Do	Steel rails	June 27, 1899	2.00
Do	Steel rails	July 11, 1899	2.50
Do	Steel rails	July 22, 1899	2.00
Do	Steel rails	September 2, 1899	2.50

FREIGHT RATES FROM BIRMINGHAM, ALABAMA, TO POINTS SPECIFIED.

[These are rates stated by shippers as having been actually paid; the dates when or lines by which shipments were made were not reported.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Pig iron		\$4.11
Boston, Massachusetts	Pig iron		4.61
Charleston, South Carolina	Pig iron		2.90
Chicago, Illinois	Pig iron		4.60
Cincinnati, Ohio	Pig iron		2.73
Galveston, Texas	Pig iron		7.47
Mobile, Alabama	Pig iron		2.50
New Orleans, Louisiana	Pig iron		2.50
New York, New York	Pig iron		4.26
Omaha, Nebraska	Pig iron		5.49
Philadelphia, Pennsylvania	Pig iron		4.26
Pittsburgh, Pennsylvania	Pig iron		4.40
Portland, Oregon	Pig iron		11.15
Savannah, Georgia	Pig iron		2.90
Saint Louis, Missouri	Pig iron		2.25

FREIGHT RATES FROM NEWPORT, ENGLAND, CARDIFF, WALES, AND SWANSEA, WALES, TO POINTS SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
New Orleans, Louisiana.....	Iron	January, 1888	\$2. 19
Do	Iron	May, 1889	2. 92
New York, New York.....	Iron	January, 1888	2. 01

FREIGHT RATES FROM LONDON, ENGLAND, TO POINTS SPECIFIED.

[The rates are by the steamships of the Atlantic transport company.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Steel rails.....	June, 1890	\$1. 46
Philadelphia, Pennsylvania	Steel rails.....	January, 1890	1. 70

FREIGHT RATES FROM SWANSEA, WALES, TO POINTS SPECIFIED.

[The rates are by the steamships of the Atlantic transport company.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Tin plate	January 1, 1888 ...	\$3. 16
Do	Tin plate	May 1, 1889	3. 41
Do	Tin plate	May 1, 1890	3. 41
New York, New York.....	Tin plate	January, 1890	2. 19
Philadelphia, Pennsylvania	Tin plate	January, 1888	3. 89
Do	Tin plate	May, 1888	3. 65
Do	Tin plate	January, 1890	3. 89

FREIGHT RATES FROM BARRON, ENGLAND, TO POINT SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Iron ore	1890.....	\$2. 19

FREIGHT RATES FROM HULL, MIDDLESBOROUGH, AND NEWCASTLE-UPON-TYNE, ENGLAND, TO POINTS SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
New York, New York.....	Alkali	January, 1888	\$2. 68
Do	Alkali	June, 1888	3. 61
Do	Alkali	November, 1888 ...	3. 89
Do	Alkali	January, 1889	2. 92
Do	Alkali	March, 1890	3. 04
Do	Alkali	August, 1889	3. 16
Do	Alkali	December, 1889 ...	3. 19
Do	Alkali	January, 1890	2. 30
Do	Alkali	March, 1890	2. 68
Do	Alkali	June, 1890	3. 04
Do	Ferro-manganese	January, 1888	2. 19
Do	Ferro-manganese	November, 1888 ...	2. 60
Do	Ferro-manganese	December, 1888 ...	3. 41
Do	Spiegeleisen	March, 1889	2. 53
Do	Spiegeleisen	June, 1889	2. 07
Do	Spiegeleisen	November, 1889 ...	2. 25
Do	Spiegeleisen	January, 1890	2. 25
New Orleans, Louisiana.....	Spiegeleisen	March, 1888	3. 69

FREIGHT RATES FROM LIVERPOOL, ENGLAND, TO POINTS SPECIFIED.

[The rates are by some one of the following lines, or by lines of steam or sailing ships the names of which were not reported: the Japan line, the White Star line, the American line, or the Cunard steamship company.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
New York, New York.....	Pig iron.....	January 7, 1888...	\$1.82
Do.....	Pig iron.....	August 15, 1888...	1.52
Do.....	Pig iron.....	August 27, 1888...	1.83
Do.....	Pig iron.....	September 12, 1888...	2.43
Do.....	Pig iron.....	August 20, 1889...	1.82
Do.....	Pig iron.....	October 8, 1889...	2.43
Do.....	Pig iron.....	January, 1888...	1.52
Do.....	Pig iron.....	February, 1888...	1.52
Do.....	Pig iron.....	July, 1888...	1.03
Do.....	Pig iron.....	October, 1888...	1.46
Do.....	Pig iron.....	November, 1888...	1.22
Do.....	Pig iron.....	January, 1889...	1.19
Do.....	Spiegeleisen.....	February, 1889...	.97
Do.....	Spiegeleisen.....	March, 1889...	.97
Do.....	Pig iron.....	1888, '89, and '90...	1.73
Do.....	Steel rails.....	1888, '89, and '90...	1.72
Do.....	Tin plate.....	1888, '89, and '90...	2.01
Do.....	Cotton ties.....	1888, '89, and '90...	1.70
Do.....	Spiegeleisen.....	1888, '89, and '90...	1.22
Do.....	Bar iron and steel.....	1888, '89, and '90...	2.43
Do.....	Steel rails.....	1888, '89, and '90...	1.70
Do.....	Tin plate.....	1888...	1.81
Do.....	Tin plate.....	1889 and 1890...	1.46
Do.....	Cotton ties.....	June, 1888...	1.70
Do.....	Cotton ties.....	July, 1888...	1.70
Do.....	Cotton ties.....	August, 1888...	1.82
Do.....	Cotton ties.....	September, 1888...	1.83 to 2.01
Do.....	Cotton ties.....	October, 1888...	2.01
Do.....	Cotton ties.....	July, 1889...	1.22
Do.....	Cotton ties.....	August, 1889...	1.22
Do.....	Cotton ties.....	June, 1890...	1.73
Do.....	Hoop iron.....	May, 1888...	1.70
Do.....	Hoop iron.....	July, 1888...	1.70
Do.....	Bar iron.....	November, 1888...	2.63
Do.....	Hoop iron.....	December, 1888...	1.83
Do.....	Hoop iron.....	January, 1889...	1.83
Do.....	Hoop iron.....	February, 1889...	1.83
Do.....	Hoop iron.....	March, 1889...	1.83
Do.....	Hoop iron.....	April, 1889...	1.83 to 1.58
Do.....	Hoop iron.....	May, 1889...	1.58
Do.....	Bar iron.....	July, 1889...	2.01
Do.....	Hoop, sheet, and bar iron.....	May, 1890...	2.01 to 1.83
Do.....	Hoop, sheet, and bar iron.....	June, 1890...	2.68
Do.....	Tin plate.....	January, 1888...	2.01
Do.....	Tin plate.....	February, 1888...	2.01
Do.....	Tin plate.....	March, 1888...	2.01
Do.....	Tin plate.....	April, 1888...	2.01
Do.....	Tin plate.....	May, 1888...	1.83
Do.....	Tin plate.....	June, 1888...	1.83
Do.....	Tin plate.....	July, 1888...	1.83
Do.....	Tin plate.....	August, 1888...	1.83 to 2.01
Do.....	Tin plate.....	September, 1888...	2.01
Do.....	Tin plate.....	October, 1888...	2.01
Do.....	Tin plate.....	November, 1888...	1.83 to 2.01
Do.....	Tin plate.....	December, 1888...	1.83, 1.58, and 1.34
Do.....	Tin plate.....	January, 1889...	1.46 to 1.34
Do.....	Tin plate.....	February, 1889...	1.22
Do.....	Tin plate.....	March, 1889...	1.22
Do.....	Tin plate.....	April, 1889...	1.22
Do.....	Tin plate.....	May, 1889...	1.22
Do.....	Tin plate.....	June, 1889...	1.22 to 2.01
Do.....	Tin plate.....	July, 1889...	1.34 to 1.22
Do.....	Tin plate.....	August, 1889...	1.22
Do.....	Tin plate.....	September, 1889...	1.58, 1.46, and 1.24
Do.....	Tin plate.....	October, 1889...	1.58 to 1.40
Do.....	Tin plate.....	November, 1889...	1.46
Do.....	Tin plate.....	December, 1889...	1.46
Do.....	Tin plate.....	January, 1890...	1.46 to 1.22
Do.....	Tin plate.....	February, 1890...	1.22 to 1.34
Do.....	Tin plate.....	March, 1890...	1.22, 1.34, and 2.01
Do.....	Tin plate.....	April, 1890...	2.01 to 1.83
Do.....	Tin plate.....	May, 1890...	1.46 to 1.58
Do.....	Tin plate.....	June, 1890...	2.01, 1.70, and 1.46
Do.....	Pig iron and spiegeleisen.....	January, 1888...	.97
Do.....	Pig iron and spiegeleisen.....	February, 1888...	1.22
Do.....	Pig iron and spiegeleisen.....	March, 1888...	1.22
Do.....	Pig iron and spiegeleisen.....	April, 1888...	.73
Do.....	Pig iron and spiegeleisen.....	May, 1888...	1.46

FREIGHT RATES FROM LIVERPOOL, ENGLAND, TO POINTS SPECIFIED—Continued.

[The rates are by some one of the following lines, or by lines of steam or sailing ships the names of which were not reported: the Inman line, the White Star line, the American line, or the Cunard steamship company.]

Destination of freight.	Kind of freight.		Rate per ton (2,240 pounds).
New York, New York.....	Pig iron and spiegeleisen.....	July, 1898.....	\$0.97
Do.....	Pig iron and spiegeleisen.....	August, 1898.....	1.46
Do.....	Pig iron and spiegeleisen.....	October, 1898.....	1.46 to 1.34
Do.....	Pig iron and spiegeleisen.....	November, 1898.....	1.33
Do.....	Pig iron and spiegeleisen.....	February, 1899.....	.97
Do.....	Pig iron and spiegeleisen.....	March, 1899.....	1.22
Do.....	Pig iron and spiegeleisen.....	April, 1899.....	.97
Do.....	Pig iron and spiegeleisen.....	May, 1899.....	.97
Do.....	Pig iron and spiegeleisen.....	June, 1899.....	.97
Do.....	Pig iron and spiegeleisen.....	July, 1899.....	1.22 to .97
Do.....	Pig iron and spiegeleisen.....	August, 1899.....	1.22 to 1.10
Do.....	Pig iron and spiegeleisen.....	September, 1899.....	0.97, 1.10, and 1.22
Do.....	Pig iron and spiegeleisen.....	October, 1899.....	1.22 to 1.10
Do.....	Pig iron and spiegeleisen.....	November, 1899.....	1.10
Do.....	Pig iron and spiegeleisen.....	December, 1899.....	1.10
Do.....	Pig iron and spiegeleisen.....	January, 1900.....	1.10 to 1.22
Do.....	Pig iron and spiegeleisen.....	February, 1900.....	1.10
Do.....	Pig iron and spiegeleisen.....	March, 1900.....	1.10
Do.....	Pig iron and spiegeleisen.....	April, 1900.....	1.46
Do.....	Pig iron and spiegeleisen.....	May, 1899.....	1.33
Do.....	Pig iron and spiegeleisen.....	June, 1900.....	1.22 to 1.10
Boston, Massachusetts.....	Pig iron.....	February, 1898.....	.87
Do.....	Pig iron.....	July, 1898.....	1.46
Do.....	Steel blooms and slabs.....	September, 1898.....	.97
Do.....	Tin plate.....	1898.....	1.34 to 1.46
Do.....	Tin plate.....	1899.....	1.33 to 1.46
Do.....	Tin plate.....	1900.....	1.22 to 1.34
Do.....	Pig iron and spiegeleisen.....	February, 1898.....	.85
Do.....	Pig iron and spiegeleisen.....	March, 1898.....	.85
Do.....	Pig iron and spiegeleisen.....	April, 1898.....	.85
Do.....	Pig iron and spiegeleisen.....	May, 1898.....	.85
Do.....	Pig iron and spiegeleisen.....	November, 1898.....	.73
Do.....	Pig iron and spiegeleisen.....	January, 1899.....	.97
Do.....	Pig iron and spiegeleisen.....	February, 1899.....	.97
Do.....	Pig iron and spiegeleisen.....	August, 1899.....	.73 to .61
Do.....	Pig iron and spiegeleisen.....	September, 1899.....	.49
Do.....	Pig iron and spiegeleisen.....	December, 1899.....	1.10
Do.....	Pig iron and spiegeleisen.....	January, 1900.....	1.10
Do.....	Pig iron and spiegeleisen.....	April, 1900.....	1.10
Do.....	Pig iron and spiegeleisen.....	May, 1899.....	.73
Do.....	Hoop, sheet, and bar iron.....	January, 1899.....	1.88
Do.....	Hoop, sheet, and bar iron.....	November, 1898.....	1.59 to 1.70
Do.....	Hoop, sheet, and bar iron.....	December, 1898.....	1.83
Do.....	Hoop, sheet, and bar iron.....	January, 1899.....	2.01
Do.....	Hoop, sheet, and bar iron.....	February, 1899.....	2.01
Do.....	Hoop, sheet, and bar iron.....	March, 1899.....	1.83
Do.....	Hoop, sheet, and bar iron.....	April, 1899.....	1.70
Do.....	Hoop, sheet, and bar iron.....	May, 1899.....	1.70
Do.....	Hoop, sheet, and bar iron.....	June, 1899.....	1.58
Do.....	Hoop, sheet, and bar iron.....	September, 1899.....	1.58
Do.....	Hoop, sheet, and bar iron.....	October, 1899.....	1.46
Do.....	Hoop, sheet, and bar iron.....	November, 1899.....	1.46
Do.....	Hoop, sheet, and bar iron.....	January, 1900.....	1.46
Do.....	Hoop, sheet, and bar iron.....	February, 1900.....	1.46
Do.....	Hoop, sheet, and bar iron.....	April, 1900.....	2.01
Baltimore, Maryland.....	Spiegeleisen.....	May, 1899.....	1.53
Do.....	Spiegeleisen.....	June, 1899.....	1.53
Do.....	Pig iron.....	1898, '89, and '90.....	1.22
Do.....	Iron ore.....	1898 and 1899.....	1.70
Do.....	Iron ore.....	1900.....	1.22
Do.....	Tin plate.....	1898, '89, and '90.....	1.46
New Orleans, Louisiana.....	Pig iron.....	March, 1899.....	1.83
Do.....	Pig iron.....	1898, '89, and '90.....	1.70
Do.....	Cotton ties.....	April, 1898.....	3.04
Do.....	Cotton ties.....	October, 1898.....	2.45
Do.....	Cotton ties.....	April, 1899.....	3.01
Do.....	Cotton ties.....	October, 1899.....	2.43
Do.....	Cotton ties.....	April, 1900.....	3.04
Do.....	Steel rails.....	April, 1898.....	2.43
Do.....	Steel rails.....	October, 1898.....	2.19
Do.....	Steel rails.....	April, 1899.....	2.43
Do.....	Steel rails.....	January, 1900.....	1.95
Philadelphia, Pennsylvania.....	Pig iron.....	January, 1898.....	1.95
Do.....	Pig iron.....	August 15, 1898.....	1.85
Do.....	Pig iron.....	August 25, 1898.....	1.95
Do.....	Pig iron.....	January, 1899.....	1.70
Do.....	Pig iron.....	February, 1899.....	1.83
Do.....	Pig iron.....	April, 1899.....	1.70

FREIGHT RATES FROM LIVERPOOL, ENGLAND, TO POINTS SPECIFIED—Concluded.

[The rates are by some one of the following lines, or by lines of steam or sailing ships the names of which were not reported: the Inman line, the White Star line, the American line, or the Cunard steamship company.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Philadelphia, Pennsylvania	Hoop iron.....	1888, '89, and '90...	\$2.43
Do	Steel slabs	1888, '89, and '90...	1.96
Do	Tin plate	1888.....	2.43
Do	Tin plate	1889.....	2.01
Do	Tin plate	1890.....	2.43
Galveston, Texas.....	Pig iron	April, 1888	3.04
Do	Pig iron	October, 1888.....	2.43
Do	Pig iron	April, 1889	3.04
Do	Pig iron	October, 1889.....	2.43
Do	Pig iron	April, 1890	3.64
Do	Tin plate and steel.....	1888, '89, and '90...	3.65
Do	Cotton ties.....	1888, '89, and '90...	2.43
Do	Bar iron and bar steel.....	1888, '89, and '90...	4.87
San Francisco, California.....	Finished iron and steel	May, 1888	8.52
Do	Finished iron and steel	June 21, 1888	9.12
Do	Finished iron and steel	August, 1888	8.52
Do	Finished iron and steel	January 30, 1889 ..	7.30
Do	Finished iron and steel	May 5, 1889.....	5.47
Do	Finished iron and steel	August 29, 1889 ...	6.08
Do	Sheet iron, tin plate, etc....	October, 1889.....	6.39
Do	Pig iron	October, 1889.....	5.47
Do	Pig iron	June, 1890	4.87
Do	Tin plate	June, 1890	5.17
Do	Pig iron	June, 1888	8.70
Do	Pig iron	October, 1888.....	8.03
Do	Pig iron	January, 1889	9.37
Do	Pig iron	March, 1889	8.03
Do	Pig iron	June, 1889	8.03
Do	Pig iron	July, 1889.....	4.55
Do	Pig iron	November, 1889...	6.83
Do	Pig iron	January, 1890.....	6.69
Do	Pig iron	June, 1890	4.01
Do	Bar iron and steel.....	October, 1888.....	9.37
Do	Bar iron and steel.....	February, 1889....	9.37
Do	Bar iron and steel.....	May, 1889.....	6.26
Montreal, Canada	Steel rails.....	July and August, 1888.	1.70
Do	Steel rails.....	July and August, 1889.	1.58
Halifax, Nova Scotia	Steel rails.....	September, 1888...	2.68
Saint John, New Brunswick.....	Steel rails.....	September, 1888...	2.68

FREIGHT RATES FROM GLASGOW, SCOTLAND, TO POINTS SPECIFIED.

[The rates are by some one of the following lines or by a line of sailing ships the name of which was not reported: the Alien line, the Anchor line, the State steamship company, or Donaldson & Brother's steamships.]

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland.....	Steel rails, steel, and iron...	1888.....	\$1.83 to \$1.95
Do	Plates and bars.....	1889.....	1.70 to 1.83
Do	Plates and bars.....	1890.....	1.70
Do	Steel slabs.....	1888, '89, and '90...	.61
Boston, Massachusetts.....	Pig iron	1888.....	1.58 to 1.95
Do	Pig iron	1888.....	1.72 to 1.70
Do	Steel plates.....	1888, '89, and '90...	2.43 to 3.04
New York, New York.....	Pig iron	January, 1888.....	1.28
Do	Pig iron	February, 1888.....	1.34
Do	Pig iron	March, 1888.....	1.70
Do	Pig iron	May, 1888.....	1.22
Do	Pig iron	September, 1888...	.85
Do	Pig iron	December, 1888...	.61
Do	Pig iron	January, 1889.....	.61
Do	Pig iron	February, 1889.....	.61
Do	Pig iron	March, 1889.....	.61
Do	Pig iron	May, 1889.....	.73
Do	Pig iron	September, 1889...	.85
Do	Pig iron	November, 1889...	.49
Do	Pig iron	December, 1889...	.24
Do	Pig iron	January, 1890.....	.61
Do	Pig iron	April, 1890.....	.49
Do	Pig iron	May, 1890.....	.24
Do	Slabs	March, 1888.....	1.95
Do	Slabs	May, 1888.....	1.70
Do	Slabs	September, 1888...	1.83
Do	Slabs	December, 1888...	1.83
Do	Slabs	January, 1889.....	1.70
Do	Slabs	March, 1889.....	1.70
Do	Slabs	May, 1889.....	1.58
Do	Slabs	September, 1889...	1.34
Do	Slabs	November, 1889...	1.34
Do	Slabs	December, 1889...	.73
Do	Slabs	January, 1890.....	.73
Do	Slabs	April, 1890.....	.61
Do	Slabs	May, 1890.....	.61
Do	Steel sheets, plates, and bars	1888, '89, and '90...	2.43
Do	Steel billets.....	1888, '89, and '90...	1.83
Philadelphia, Pennsylvania	Pig iron	1888.....	1.58
Do	Pig iron	1889 and '90.....	1.70
Do	Slabs	1888 and '89.....	1.70 to 2.43
Do	Slabs	1890.....	.85 to 1.10
Do	Steel plates.....	1888, '89, and '90...	2.43 to 3.04
San Francisco, California	Steel sheets and plates.....	1888.....	10.71
Do	Steel sheets and plates.....	January 1, 1889...	10.71
Do	Steel sheets and plates.....	July 1, 1889.....	8.52
Do	Steel sheets and plates.....	January 1, 1890...	5.47
Do	Pig iron	1888.....	9.12
Do	Pig iron	January 1, 1889...	8.03
Do	Pig iron	July 1, 1889.....	6.08
Do	Pig iron	January 1, 1890...	4.87

FREIGHT RATES FROM BENI-SOOEF, EGYPT, TO POINTS SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Iron ore.....	January, 1888.....	\$2.41
Do	Iron ore.....	March, 1888.....	3.53
Do	Iron ore.....	December, 1889...	2.43
Philadelphia, Pennsylvania	Iron ore.....	March, 1888.....	3.71 to 3.77
Do	Iron ore.....	July, 1888.....	3.16
Do	Iron ore.....	August, 1888.....	3.16 to 3.28
Do	Iron ore.....	February, 1890.....	2.25 to 2.37

FREIGHT RATES FROM BILBAO, SPAIN, TO POINTS SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
New York, New York.....	Iron ore.....	January, 1890.....	\$2.68 to \$2.92
Philadelphia, Pennsylvania	Iron ore.....	September, 1888...	3.41
Do	Iron ore.....	October, 1888.....	3.41
Do	Iron ore.....	March, 1890.....	2.68 to 2.92

FREIGHT RATES FROM GARUCHA TO POINT SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Philadelphia, Pennsylvania	Iron ore	October, 1888.....	\$4. 38
Do	Iron ore	November, 1888 ...	4. 38
Do	Iron ore	December, 1888 ...	3. 89 to 4. 01
Do	Iron ore	May, 1889	3. 41 to 3. 59
Do	Iron ore	June, 1889	3. 28 to 3. 53

FREIGHT RATES FROM HUELVA, SPAIN, TO POINT SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Philadelphia, Pennsylvania	Iron ore	April, 1888.....	\$3. 95
Do	Iron ore	January, 1889.....	3. 77
Do	Iron ore	February, 1889....	3. 89
Do	Iron ore	March, 1889.....	4. 14
Do	Iron ore	April, 1889.....	4. 14
Do	Iron ore	December, 1889 ...	3. 41
Do	Iron ore	March, 1890.....	3. 10

FREIGHT RATES FROM MACRI, TURKEY, TO POINT SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Iron ore	March, 1889.....	\$4. 38

FREIGHT RATES FROM MARBELLA, SPAIN, TO POINT SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Philadelphia, Pennsylvania	Iron ore	March, 1888.....	\$3. 80 to \$3. 83
Do	Iron ore	July, 1888.....	3. 41
Do	Iron ore	August, 1888.....	3. 16
Do	Iron ore	September, 1888...	3. 77
Do	Iron ore	November, 1888...	3. 41
Do	Iron ore	December, 1888 ...	3. 16 to 3. 65
Do	Iron ore	February, 1889....	3. 41
Do	Iron ore	March, 1889.....	3. 65
Do	Iron ore	April, 1889.....	3. 77
Do	Iron ore	May, 1889.....	3. 65 to 3. 77
Do	Iron ore	June, 1889	3. 28 to 3. 53
Do	Iron ore	August, 1889.....	2. 92
Do	Iron ore	September, 1889...	2. 56 to 2. 80
Do	Iron ore	November, 1889...	2. 98
Do	Iron ore	December, 1889 ...	2. 92 to 3. 04
Do	Iron ore	January, 1890.....	2. 92
Do	Iron ore	February, 1890....	2. 74 to 3. 04
Do	Iron ore	March, 1890.....	2. 43
Do	Iron ore	June, 1890	2. 56

FREIGHT RATES FROM MAZARRON, SPAIN, TO POINTS SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Iron ore	April, 1888	\$3. 80
Do	Iron ore	June, 1888	3. 89
Philadelphia, Pennsylvania	Iron ore	March, 1888.....	3. 35 to 3. 89
Do	Iron ore	October, 1889.....	3. 16

FREIGHT RATES FROM MILOS TO POINT SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Iron ore	December, 1889 ...	\$3. 41

FREIGHT RATES FROM PERAZUELOS TO POINT SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Iron ore	December, 1889 ...	\$2.98
Do	Iron ore	January, 1890	2.04

FREIGHT RATES FROM PORMAN TO POINTS SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
Baltimore, Maryland	Iron ore	January, 1888	\$3.41
Do	Iron ore	February, 1888	2.98
Do	Iron ore	August, 1888	2.16
Do	Iron ore	December, 1888 ...	2.92
Do	Iron ore	January, 1889	2.92 to 2.04
Do	Iron ore	February, 1889	2.41
Do	Iron ore	June, 1889	2.68
Do	Iron ore	August, 1889	2.68
Do	Iron ore	September, 1889 ...	2.43 to 2.56
Do	Iron ore	December, 1889 ...	2.56 to 2.80
Do	Iron ore	January, 1890	2.74
Do	Iron ore	February, 1890	2.56 to 2.68
Do	Iron ore	June, 1890	2.25 to 2.37
Philadelphia, Pennsylvania	Iron ore	January, 1888	2.53
Do	Iron ore	February, 1888	3.16 to 2.41
Do	Iron ore	March, 1888	2.80
Do	Iron ore	December, 1888 ...	2.16
Do	Iron ore	June, 1889	2.96
Do	Iron ore	September, 1889 ...	2.43
Do	Iron ore	January, 1890	2.04
Do	Iron ore	February, 1890	2.49 to 2.80
Do	Iron ore	March, 1890	2.13
Do	Iron ore	April, 1890	2.19
Do	Iron ore	June, 1890	2.37 to 2.80

FREIGHT RATES FROM SERPHO TO POINTS SPECIFIED.

Destination of freight.	Kind of freight.	Date.	Rate per ton (2,240 pounds).
New York, New York	Iron ore	March, 1890	\$3.38
Do	Iron ore	May, 1890	2.04
Philadelphia, Pennsylvania	Iron ore	February, 1888	2.63
Do	Iron ore	July, 1888	2.63
Do	Iron ore	December, 1888 ...	2.71
Do	Iron ore	April, 1889	2.80
Do	Iron ore	May, 1889	2.77
Do	Iron ore	September, 1889 ...	2.28
Do	Iron ore	December, 1889 ...	2.47
Do	Iron ore	April, 1890	2.92 to 2.16
Do	Iron ore	June, 1890	2.04

PART II.

TIME AND EARNINGS—EFFICIENCY OF LABOR.

TIME AND EARNINGS.

TIME AND EARNINGS.

Part II deals with the time employed, the earnings gained, and the efficiency of the workmen engaged in production. The subject first taken up is time and earnings. Of the 618 establishments represented in the tabulation of cost of production in Part I, copies of the payrolls were made in ninety-nine cases, and these served as the basis of the tables which are to follow. As a rule the period for which these rolls were copied was the same as that for the cost of production. Quite generally this period is for one year.

No necessity seemed to exist for collecting these data from all the 618 establishments, as what has been gathered and presented adequately represents, without doubt, all the existent conditions as to wages and duration of employment. The following statement shows the distribution of these ninety-nine establishments among the several industries:

NUMBER OF ESTABLISHMENTS TABULATED IN TIME AND EARNINGS.

Industry and locality.	Estab-lish-ments tabu-lated.
Pig IRON:	
Northern district of the United States.....	12
Southern district of the United States.....	5
Continent of Europe	2
Great Britain.....	3
Total.....	22
MUCK BAR IRON:	
United States	4
Great Britain	1
Total.....	5
FINISHED BAR IRON:	
United States	2
Great Britain	1
Total.....	3
STEEL INGOTS:	
United States	4
Continent of Europe	3
Total.....	7
STEEL PILLETS:	
United States	1
STEEL BLOOMS:	
United States	2
STEEL RAILS:	
Continent of Europe.....	2
MIXED IRON AND STEEL:	
United States	9
Continent of Europe.....	5
Great Britain	3
Total.....	17

TABLE XIV.—Summary of Actual and Theoretical Time and Earnings by Industries.

- A.—Pig iron.
- B.—Muck bar iron.
- C.—Finished bar iron.
- D.—Steel ingots.
- E.—Steel billets.
- F.—Steel blooms.
- G.—Steel rails.
- H.—Mixed iron and steel.
- J.—Bituminous coal.
- K.—Coke.
- L.—Iron ore.

Table XII presents the facts in detail for each establishment separately through the several industries from A to Y. Table XIII summarizes these facts by occupations, and Table XIV summarizes them by bringing the establishment totals together in each industry. The establishment numbers refer to establishments numbered the same in Part I, relating to cost of production. Thus establishment number 10, the second here tabulated as to time and earnings, is the identical number 10 appearing in the cost of production tables, pages 35 to 60. The numbers omitted are, of course, those of the establishments before referred to for which copies of payrolls were not made.

Under working days in the period appears the number of possible working days during the whole period for each class of employés. This period may exceed the number of days of actual running time for the establishment, and it will always do so when, during the period, the establishment has been temporarily closed. In different industries these possible working days may differ, although the period of time be the same, because in some industries, as in pig iron, the establishment usually runs every day in the period, while in others, as in iron ore mining, it closes on Sundays. Likewise in different occupations in the same establishment they may differ, because in pig iron, for example, the regular furnace employés work every day, while the repair men, laborers, and various others, as a rule, work on week days only.

The columns showing the actual condition for the period are referred to a little further along and such explanation made as seems needed; they embody the actual results taken from the payrolls. The last two columns of the table, however, do not represent actual conditions, but theoretical ones. The first of these two columns shows the number of employés that would be necessary (usually a fractional number of men), working continuously through the period, to perform the actual days of work given; and the second shows the consequent average earnings for the period of one such employé. The essential object of the comparison here is to show the great difference between the actual force and the necessary force in establishments, and between what men are actually paid during a fixed time (as, say a year) and what they are theoretic-

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

A.—Pig Iron: NORTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 10—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. from em- ploy- ee.	Days of work done.		Earnings.	Neces- sary em- ploy- ee.	Conse- quent average earnings per em- ploy- ee.
				Total.	Aver- age.	Total.	Aver- age.	
Mason and stonemason	365	\$1.88½	1	286	286	\$567	\$567	0.78
Masons' helpers	312	1.25	1	52	52	98	98	0.17
	312	1.25	1	201	201	407	407	0.26
	312	1.50	1	17	17	25	25	0.03
	312	1.60	1	15	15	24	24	0.07
	312	1.75	3	33	11	57	19	0.11
Total	312	1.39½	7	418	60	579	81	1.34
Moulders	365	1.41½	1	130	130	184	184	0.36
	365	1.05	1	135	135	223	223	0.37
Total	365	1.53½	2	265	133	407	204	0.73
Pipe fitters	312	1.63	1	104	104	170	170	0.33
	312	2.00	1	50	50	96	96	0.16
	312	2.25	1	9	9	20	20	0.03
Total	312	1.75½	2	163	54	286	96	0.52
Pollicemen	365	1.48	8	418	52	618	77	1.16
Sample boys	203	.80	2	177	89	89	45	0.46
	365	.75	1	125	125	101	101	0.37
Total	365	.61	3	312	104	190	63	0.65
Sample man	263	1.50	1	242	242	363	363	0.66
Scrapmen	365	1.64	1	237	237	396	396	0.85
	365	1.75	4	183	46	323	81	0.61
Total	365	1.60	5	422	84	713	143	1.16
Stork preparers	365	1.59	98	3,061	31	4,592	47	8.36
Storkkeeper	365	1.65	1	339	339	539	539	0.83
Stonemason	365	2.00	1	337	337	655	655	0.91
Stonemason & helper	365	1.75	1	351	351	640	640	0.96
Timekeeper	365	1.52	1	325	325	510	510	0.82
Water boys	365	.75	1	213	213	100	100	0.36
	203	.50	6	517	86	463	77	1.42
Total	365	.85½	7	720	104	623	89	2.00
Water tenders	365	2.00	2	700	253	1,511	504	2.08
Weighman	365	1.07½	1	365	365	720	720	1.00
The establishment		1.67½	507	45,039	89	\$75,518	149	127.65

a In addition \$2.007 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 51.

Ordinarily in any industry there will be much difficulty and even impossibility in determining the time of piece workers.

Often certain important employes work in gaugs, crews, turns, shops, etc., different industries having different terms. The method of payment is equally various, and is not universally alike in any one industry. The following shows one method of payment for a crew of rollers in a rolling mill.

Let us suppose that work goes on continuously night and day for $5\frac{1}{2}$ days each week. Two crews, each working a turn of 12 hours, will be necessary, known respectively as the day crew and the night crew. The composition of each will be about as follows: one roller, one heater, two roughers, two scrapers, one poke-in, two straighteners. These crews alternate in day and night work each week, the crew doing day work one week doing night work the next. A record is kept of the number of pounds of iron rolled by each crew. Let us suppose that wages are paid once in two weeks. These wages are paid to one of the rollers, who is known as the chief roller, and the payrolls of the company show no recognition of the other persons in the crews. The amount paid this chief roller will be a certain sum per ton for the whole amount of finished product. He now proceeds to divide this amount among the men. It is to be presumed that the amount of product of one crew will be somewhat larger than that of the other; so each is considered separately. Of the amount due his own crew he pays one-fourth to the heater and one-eighth to each of the roughers. He pays the scrapers, straighteners, and poke-in a fixed sum per day, each class being at a different rate. The other crew is paid off in a similar way, what the heater and rougher gets being based on the product of the crew. He pays the other roller usually a fixed sum per day. After making all these payments, what is left belongs to himself. It may be presumed that the chief roller does not concern himself with keeping a permanent record of these transactions, and as the only record the mill has is of the tons of product of each payment period and the amount paid the chief roller, and as the composition of the crews is changing from time to time, and the number of turns of work in a month varying at different seasons, the difficulty of ascertaining the number of days of work done and the earnings of each person in a year is great. Of course, in the case of piece workers when the time is obtainable, you will have, in a computation for a day, as many rates as you have individuals, which is an embarrassment of exactness.

There are also employes who work by the hour at one occupation, conjoined with piece work at another. Again, a certain class of labor which is performed by the hired workmen of one establishment, in another is let out to a contractor who hires his own help, and the establishment has no record of anything but the amount paid this contractor.


It is apparent that after the tedious labor of copying a payroll has been performed, it may be found that the material is quite incomplete.

No attempt has been made to supply such lacking information by estimates, except in immaterial instances, which are indicated by foot notes. In other words, the tables represent the actual facts, except as the exigencies of statistical treatment have harmlessly modified them in accordance with what follows on the methods of handling the most important of the difficulties referred to. The goodly proportion of employes working at but a single occupation for a single rate of course offers no difficulties. The treatment of other cases is now noted.

An employe found working at two or more occupations has been credited with his total time and earnings as made at that occupation at which he worked the longest, provided that three-fourths or more of his time was employed at it; also, he has been credited with his total time and earnings as made at the one of any two occupations at which he worked the longest, the daily rates of which were alike or differed not more than 10 cents, provided the time of the two combined was equal to three-fourths of his whole time. When an employe has made less than three-fourths of his time at one occupation, or at two or more, as just noted, he has been credited with his total time and earnings as made at a compound occupation, consisting of the several single occupations, as "cinderman and laborer."

Whenever possible, the actual daily rates paid by employers have been used instead of computed daily earnings. If the employe received the same daily rate of pay throughout the period, that rate, of course, has been used. If he was paid at several rates, the one nearest his actual average daily earnings has been given him, if it differed not more than 10 cents from such actual average daily earnings. If, however, the difference was greater than 10 cents, the actual average daily earnings (the quotient of total earnings divided by total days) has been used as the rate.

For a number of employes working wholly by the piece, no time could be given. In some cases where men were paid by the quantity or by contract, the exact time was obtained and has been used. In other cases, where they were also paid by the quantity or by contract, no exact time could be given by the employers; but in quite a number of these cases it was possible for the special agent to estimate the time on the basis of information furnished by the proprietor or the men. These estimates have usually been accepted and used as being reliable. In the cases of piece workers whose time was given and of all employes for whom no actual daily rate paid was known, the rates used were the actual average daily earnings (the quotient of total earnings divided by total days). Of course in this way a new rate was obtained for each particular case, and for the sake of brevity in the presentation, they were then arranged in groups in such a way that the actual average daily earnings of each group should be about 25 cents from the group below and above. In the cases previously mentioned where the time was unknown and unobtainable, the tables will show no data for rates, time, and other columns dependent upon the time. In a very few cases,



mostly occupations demanding a high degree of skill, the number of employes will be found lacking, as well as the rates, time, etc. This latter defect arose from the fact that the work was given out to contractors by the company, and nothing beyond the total sum paid to such contractor was shown by the books of the establishment. From what has been said it is apparent that the rate multiplied by the days of work done will not always produce exactly the earnings.

With these explanations we are prepared to understand and use the tables. Table XII takes up by number each establishment for which payrolls were copied. For example let us look at establishment number 10 (pages 296, 297, and 298), which is a blast furnace in the northern district of the United States. It shows for each occupation in that establishment the working days in the period covered by the investigation, the actual daily earnings or daily rate nearest to the average daily earnings, the number of different employes that have been employed in the establishment, together with the total days of work done, the average days of work done, the total earnings, and the average earnings for the period covered, and then, in the two right-hand columns of the table the number of employes that would be necessary to do the work if they should work continuously through the period, and the consequent average earnings for each of such employes for the period. To take a single case from Table XII—fillers. There were employed in establishment number 10, an establishment working 365 days, 94 different employes as fillers. Their actual daily earnings for the days worked were on an average \$1.58; they worked 7,219 days in all during the whole period, or an average for each filler of 77 days. The total earnings of the whole 94 were \$11,398, or an average for each of \$121 during the year. Now, 19.78 men, mathematically speaking, if they had worked continuously for the whole period that the establishment was running, would have accomplished the same results that the 94 different fillers accomplished, and each one would have earned on an average \$576. This illustration clearly shows how Table XII is to be used.

Table XII is followed by Table XIII, which is a summary of it by occupations. The figures used in this table are always the totals for each occupation, as given in Table XII. The column of actual daily earnings, or daily rate nearest to average daily earnings, will generally, in Table XIII, show average daily earnings, as the two or more rates so often appearing in Table XII are here reduced to a single statement. In comparing the earnings in any occupation at different establishments the length of the period covered must be noted, and the industry itself should not be overlooked. While in some cases a name may stand for the same duties through the different industries, in general comparisons cannot be safely made beyond the limits of an industry. "Mixed iron and steel" is a title of general rather than specific meaning. It is applied to establishments producing a more or less mis-

cellaneous assortment of products, for any one of which it was impossible to obtain statements, either in cost of production or in the time employed and earnings of workmen. The name, therefore, may cover half a dozen different though allied products. The basis of the theoretical condition in each table is, of course, variable, every establishment having one of its own, which is the number of working days in the period. The consequent average earnings per employé can be directly compared only when this basis is the same.

Table XIV brings together the establishment totals of Table XII for more convenient comparison of establishment results. As an illustration, looking at its first page, subdivision A, pig iron, we find that establishment number 10 is situated in the northern district of the United States; that the length of the period covered by our returns is one year; that the actual average daily earnings in that establishment, as a whole, were \$1.67½; that there were 507 different individual employés who did an amount of work represented by the total of 45,039 days, or an average for each individual employé of 89 days; that the total earnings of the whole 507 individual employés, working on an average of 89 days each, was \$75,519, giving to each employé an average actual earning of \$140. Looking at the last two columns of the table, it will be seen that if, instead of 507 individual employés working during the period an average of 89 days each, 127.65 employés had been kept at work continuously throughout the whole period, they would have accomplished the same results and would have earned \$592 each.

The Department is inquired of from time to time as to the rate of wages paid in different employments in the different states of the Union, generally, it would appear, with the expectation that a definite answer can be made, and quite exact figures given, for instance, for puddlers in New York or carpenters in Ohio, or at least that somewhere within the realm of accomplishment just such definite results are waiting only to be gathered and presented in tabular columns in a way to settle the matter of rates of wages for every occupation in every state and country of the civilized world for the present generation. Reflection seems hardly needed to show that such figures do not and cannot exist. Large collections from important establishments engaged in the principal industries of different countries, if made substantially at the same time and exactly on the same basis, would prove the nearest possible approach to such information, and would be far beyond what has yet been done, and an attempt at this is in contemplation by the Department. Meanwhile the results here presented may be accepted as much more exact in detail and more comprehensive in scope than could be carried out in such a large investigation; since such a work would have to be confined to rates of wages mainly, while this survey in addition the actual days of work done by and earnings of each workman. But with regard to the repeated inquiry what is the rate of wages in such or such an occupation these tables are ample

to show that specifically no answer can be made. For instance, if we examine Table XIII, where those pursuing like occupations in different establishments in different states are brought together, we shall see how various are the daily rates of pay for similar work. As an example, let us look at the blacksmiths. For convenience of comparison, the following cases which run from the lowest to the highest rate of any given for the United States are extracted from Table XIII and are here presented :

THE VARYING WAGES OF BLACKSMITHS IN THE UNITED STATES.

Work- ing days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.					Condition if workmen had continuous em- ployment.	
		Different employés.	Days of work done.		Earnings.		Necessary employés.	Conse- quent aver- age earn- ings per employé.
			Total.	Average.	Total.	Average.		
313	\$1. 20	2	249	125	\$298	\$149	0.80	\$375
313	1. 83	3	511	170	935	312	1. 63	578
313	1. 84½	2	610	305	1, 124	562	1. 95	577
313	1. 97	9	2, 442	271	4, 810	534	7. 80	617
313	2. 00	2	157	79	314	157	0. 50	626
313	2. 08½	9	223	25	465	52	0. 70	653
313	2. 18½	5	661	132	1, 445	289	2. 11	684
313	2. 25	1	68	68	153	153	0. 22	704
313	2. 35	2	560	280	1, 316	658	1. 79	736
313	2. 28	6	249	42	592	99	0. 80	744
313	2. 40	1	202	202	485	485	0. 65	752
313	2. 43½	5	924	185	2, 250	450	2. 95	762
313	2. 75	1	294	294	808	808	0. 94	860
313	2. 75½	1	201	201	552	552	0. 64	860
313	2. 83½	5	853	171	2, 418	484	2. 78	887
313	2. 08½	5	879	176	2, 625	525	2. 81	935
313	3. 60	1	310	310	1, 120	1, 120	0. 99	1, 131

The distribution of the establishments among different states from which the instances of blacksmiths shown above are drawn is omitted in all tables in this volume for reasons given in the introduction, but the statement can be made that the seventeen cases are distributed through ten states as follows: five are in Pennsylvania, three in New York, two in Illinois, and one each in Alabama, Wisconsin, Virginia West Virginia, Missouri, Ohio, and Indiana. If other occupations are studied it will be found that in a like way a wide range of rates of pay exists. If the instances had all been drawn from a single state, while the diversity might not have been so great, it would still have been sufficiently striking to show that no such thing as a fixed rate of pay in any occupation exists anywhere in the United States. This, of course, does not mean that for all the workmen in an occupation there is no difference between Massachusetts and North Carolina, or Wisconsin and Florida, or between other states.

Tables XII, XIII, and XIV now follow :

TABLE XEE—ACTUAL AND THEORETICAL TIME AND EARNINGS.

A.—Fig Iron: NORTHERN DISTRICT OF THE UNITED STATES.

ESTABLISHMENT No. 9.

Description of work.	Weekly days in period.	Actual daily earn- ings, or daily rate multiplied by average daily employ- ment.	Actual condition for period.				Comparison of actual and theoretical earnings.	
			Dif- ference between actual and theoretical employ- ment.	Days of work done.		Earnings.		Per- centage of theoretical earnings actually received.
				Total.	Aver- age.	Total.	Aver- age.	
Machine work.	310 310	22.00 2.30	1 8	59 190	59 38	8117 875	8117 85	4.39 4.40
Hand work.	310	2.30	8	269	62	562	80	2.39
Machine work in the shop.	310 310	2.30 1.00	1 3	33 178	33 59	44 285	44 85	4.11 4.12
Hand work.	310	1.30	4	211	53	378	62	1.40
Machine work in the shop.	310 310	2.30 1.30	2 1	34 9	10 9	40 14	30 14	1.47 4.12
Hand work.	310 310	2.30 2.30	1 1	241 130	241 159	538 274	538 274	4.40 4.40
Machine work.	310	2.30	3	400	300	982	651	2.31
Hand work.	310 310	2.00 2.30	1 1	85 163	85 163	163 457	163 657	4.11 4.12
Machine work.	310	2.30	3	268	134	626	112	4.40
Hand work.	310 310	2.30 2.30	2 1	448 258	223 258	894 539	472 539	1.11 1.11
Machine work.	310 310	1.30 1.30	3 1	250 325	83 325	376 629	118 629	1.40 1.40
Hand work.	310	1.30	4	375	144	1,005	151	1.17
Machine work.	310 310 310 310 310 310	1.30 4.00 2.30 4.07 1.30	1 1 1 1 1	133 17 383 321 265	133 17 383 321 265	287 51 814 832 508	287 51 814 832 508	1.10 1.10 1.10 1.10 1.10
Hand work.	310 310 310	1.30 2.30 2.30	2 12 12	411 1,159 1,430	206 97 119	777 2,291 2,670	206 139 130	1.11 1.11 1.11
Machine work.	310	2.30	27	3,025	112	6,138	221	4.40
Hand work.	310	2.30	1	7	7	15	15	4.40
Machine work.	310 310 310	1.30 1.30 4.00	1 1 2	1,403 1,403 402	105 278 206	2,140 2,683 1,219	140 613 613	1.11 1.11 1.11
Hand work.	310	1.30	24	3,320	134	6,644	220	1.10
Machine work.	310	2.30	1	750	220	462	62	1.10
Hand work.	310 310	1.30 2.30	4 3	542 190	140 190	1,020 380	140 380	1.11 1.11
Machine work.	310	1.30	3	1,112	134	1,416	220	1.11
Hand work.	310 310 310	1.30 2.30 1.30	1 1 1	305 261 261	105 261 261	162 743 1,200	162 743 1,200	1.11 1.11 1.11
Machine work.	310	1.30	3	1,011	101	1,100	702	1.10

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

A.—Pig Iron: NORTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 9—Continued.

Occupation.	Work- ing days in the period	Actual daily earn- ing, or daily rate nearest to average daily earn- ing.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ployed.
				Total.	Aver- age.	Total.	Aver- age.	
Helpers	385	\$2.40	0	468	52	\$1,106	\$129	809
Helpers and laborers.....	385	1.66	4	296	74	492	123	607
	385	2.04	1	68	68	139	139	746
	385	2.14	3	888	234	1,686	439	750
Total	385	2.02	8	1,248	156	2,517	315	737
Helper and metal carrier	385	2.89	1	232	232	563	563	670
Helper and ore piler.....	385	1.67	1	8	8	15	15	684
Keepers	385	3.25	2	102	81	526	263	1,185
Keeper and laborer	385	2.70	1	248	248	671	671	968
Laborers.....	385	1.00	1	43	43	44	44	373
	385	1.25	1	241	241	302	302	470
	385	1.35	25	222	9	300	12	493
	385	1.40	47	1,406	30	1,968	42	511
	385	1.50	9	863	65	874	87	547
	385	2.00	1	21	21	43	43	747
Total	385	1.40	84	2,536	30	3,589	43	613
Laborers and metal breakers.....	385	1.61	8	850	106	1,273	172	680
	385	1.85	2	622	311	1,151	172	676
Total	385	1.71	10	1,472	147	2,324	232	626
Laborers and metal carriers	385	1.00	2	224	112	358	179	683
	385	1.93	2	44	22	86	43	706
	385	2.12	2	364	182	772	386	774
	385	2.86	2	348	175	534	412	862
Total	385	2.08	8	881	123	2,038	253	750
Laborers and ore breakers.....	385	1.57	12	615	51	908	81	575
Laborer and ore piler	385	1.50	1	16	16	24	24	648
Laborer and stove cleaner.....	385	1.55	1	20	20	31	31	688
Laborer and stove tender.....	385	2.11	1	224	224	686	685	772
Laborer and water tender.....	385	1.67	1	296	296	558	558	683
Masons	313	2.00	1	17	17	33	33	608
	313	3.20	0	250	29	929	92	1,003
Total	313	3.12	10	276	28	862	86	678
Master masons.....	313	2.00	1	6	6	12	12	628
	313	6.00	1	37	37	185	185	1,565
Total	313	4.56	2	43	23	197	30	1,434
Mechanic	313	3.00	1	71	71	143	143	680
Metal breakers	385	1.79	2	566	283	1,014	507	654
	385	2.00	2	24	17	69	35	741
	385	2.10	4	568	147	1,225	306	763
Total	385	1.94	8	1,166	148	2,308	289	710
Metal carriers.....	385	2.75	6	214	36	879	87	988
	385	2.82	1	24	24	69	69	1,034
	385	3.00	12	1,036	86	3,073	256	1,003
Total	385	2.82	19	1,274	87	3,758	196	1,006

* The work done by keepers appears inadequate for the quantity of product shown on page 33.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

A.—Pig Iron: NORTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 49—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workman had continuous employment.	
			Dis- fer- ence em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ploy- ed.
				Total.	Aver- age.	Total.	Aver- age.	
Keepers	263	\$1.39	3	513	239	3932	\$466	1.43
Laborers	213	1.16	6	196	67	309	33	0.66
	213	1.15	2	43	24	54	27	0.15
	213	1.25	12	960	73	1,123	34	2.69
	213	1.23	12	2,067	229	1,733	316	0.16
Total	213	1.234	20	4,003	133	6,183	173	12.79
Shallmen	395	1.15	1	237	237	411	411	0.96
Shockers	263	1.25	3	675	273	1,039	346	2.26
	263	1.28	4	1,061	263	1,432	354	2.91
Total	263	1.31	7	1,586	299	2,471	353	5.17
Townsmen (with teams)	213	2.12	2	46	23	144	72	0.15
The establishment		1.47	116	21,461	186	31,592	277	66.73

ESTABLISHMENT No. 53.

Blacksmith	153	\$2.50	1	166	166	\$115	\$115	1.07	638
Blacksmith's helper	153	1.65	1	177	177	266	266	1.14	250
Cargemen	161	2.00	2	252	276	703	352	1.94	361
Carpenter	153	2.94	1	149	149	373	373	0.96	366
Clerks	161	1.75	13	1,674	94	1,600	150	5.71	315
Clerks and fillers	161	1.82	2	33	12	23	16	0.13	275
Clerks and laborers	161	1.58	4	50	13	73	20	0.26	286
Clerks and metal carriers	161	2.124	2	165	93	393	197	1.02	363
	161	2.08	1	153	153	419	419	0.85	406
Total	161	2.374	3	339	113	898	266	1.87	430
Coke-dust men	161	1.46	1	179	179	261	251	0.96	234
Engineers	161	2.25	3	272	166	746	373	1.83	467
	161	2.25	1	163	162	563	563	1.01	560
Total	161	2.604	3	514	171	1,338	416	2.66	471
Fillers	161	1.80	2	9	5	13	6	0.05	241
	161	1.40	32	3,057	90	4,283	134	16.80	364
	161	1.534	2	291	146	447	224	1.61	273
Total	161	1.414	36	3,357	96	4,742	137	18.55	356
Fillers, bottom	161	1.70	16	2,378	119	4,028	262	12.14	367
Fillers, top	161	2.10	4	661	173	1,365	246	3.63	379
Filler and metal carrier	161	1.654	1	147	147	243	243	0.81	390
Filler and scraper	161	1.434	1	47	47	73	73	0.26	261
Foremen	161	2.50	1	183	183	453	453	1.01	430
	161	3.00	1	182	122	349	546	1.01	642
Total	161	2.74	2	365	183	1,001	501	2.02	496

* The earnings here shown are for one year. The statement for this establishment on page 31 is for nine months only.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

A.—Pig Iron: NORTHERN DISTRICT OF THE UNITED STATE—Continued.

ESTABLISHMENT No. 10—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ- ees.	Days of work done.		Earnings.		Necessary employ- ees.
				Total.	Average.	Total.	Average.	
Pilers.....	365	\$1.50	8	194	24	\$222	\$37	0.53
	365	1.85	86	2,165	59	4,924	137	0.67
	365	1.80	45	3,399	78	5,427	121	0.51
	365	1.65	5	462	92	755	181	1.27
Total	365	1.50	94	7,219	77	11,398	121	19.78
Pilers, top.....	365	1.80	2	800	303	1,143	572	1.66
	365	2.00	1	111	111	221	221	0.30
Total	365	1.90	3	717	239	1,364	435	1.96
Pilers and ironmen.....	365	1.64	2	343	118	579	103	0.97
Butler and keepers' helper....	365	1.60	1	114	114	181	181	0.31
Pilers and laborers.....	365	1.22	8	402	50	619	77	1.10
Pilers' helpers.....	365	1.75	3	272	91	475	158	0.78
Pilers' helper and laborer....	365	1.60	1	314	314	502	502	0.66
Pilers' helper and stock preparer.	365	1.84	1	80	80	131	131	0.21
Firemen.....	365	2.00	2	610	310	1,207	604	1.70
Foremen, laborers.....	365	1.97	1	150	150	312	312	0.44
	365	2.25	1	345	345	776	776	0.65
	365	2.63	1	305	365	960	960	1.00
Total	365	2.35	3	800	290	2,048	683	2.30
Foremen, machinery.....	365	4.67	1	365	365	1,700	1,700	1.00
Foremen and weighman.....	365	1.85	1	180	180	351	351	0.53
Founder.....	365	4.78	1	59	59	400	400	0.16
Hot-cinder men.....	365	1.60	10	1,038	104	1,338	154	2.84
Hot-cinder men and laborers....	365	1.41	4	861	218	1,220	285	2.56
Iron men.....	365	1.78	17	2,868	169	5,044	297	6.42
Iron men and laborers.....	365	1.47	8	603	83	873	122	1.82
Iron man and stock preparer	365	1.63	1	65	65	106	106	0.18
Iron piler.....	365	1.66	1	3	3	6	6	0.01
Keepers.....	365	2.15	3	564	292	1,220	610	1.60
Keeper and laborer.....	363	1.72	1	26	25	43	43	0.67
Keepers' helpers.....	365	1.75	7	1,832	270	3,397	477	8.29
	365	1.90	2	677	339	1,266	633	1.83
Total	365	1.78	9	2,600	290	4,663	811	7.14
Keepers' helper and laborer....	365	1.50	1	68	68	87	87	0.16
Keepers' helper and stock preparer.	363	1.56	1	251	251	392	392	0.60
Laborers.....	313	1.35	100	5,082	51	8,303	64	15.17
Laborer and machinist.....	313	1.46	1	10	10	14	14	0.02
Laborers and scrapmen.....	365	1.67	4	316	78	490	124	0.87
Laborers and stock preparers.	365	1.28	31	1,317	42	1,820	90	3.41
Laborer and weighman.....	365	1.37	1	16	16	22	22	0.04
Machinists.....	313	2.00	1	3	3	6	6	0.01
	313	2.25	1	342	342	770	770	1.06
	313	2.45	2	543	272	1,331	666	1.73
	313	2.78	1	4	4	11	11	0.01
Total	313	2.37	5	882	178	2,118	424	2.64
Machinists' helpers.....	313	1.00	2	80	45	143	72	0.20
Masons.....	313	2.25	1	16	16	36	36	0.05
	313	2.40	2	23	12	85	28	0.07
	313	2.17	2	12	6	40	20	0.04
	313	3.62	1	328	328	1,178	1,178	1.64
Total	313	2.45	6	376	63	1,360	218	1.20

TABLE XII.—AFTER AND BEFORE: GROWING TREE AND LAUREL—Continued

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TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

A.—Pig Iron: NORTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 22.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Different employ- ees.	Days of work done.		Earnings.		Necessary employ- ees.	Consequent average earnings per employ- é.
				Total.	Average.	Total.	Average.		
Blacksmith	313	\$2.20	1	300	300	\$600	\$600	0.96	\$689
Blacksmith's helpers	313	1.30	3	312	104	407	136	1.00	408
Bricklayers	313	3.00	1	2	2	6	6	0.01	939
	313	4.00	9	8	1	32	4	0.03	1,252
Total	313	3.80	10	10	1	38	4	0.04	1,189
Cindermen	265	1.55	17	3,106	183	4,808	283	8.51	565
Cinderman and iron handler ..	365	1.02	1	254	254	411	411	0.70	501
Cinderman and laborer	365	1.48	1	108	108	160	160	0.30	541
Cleaners, stack	365	1.40	2	183	92	261	131	0.50	521
Cleaner, stack, and filler	365	1.51	1	201	201	440	440	0.80	552
Cleaner, stack, and keepers' helper.	365	1.50	1	18	18	27	27	0.05	548
Cleaner, stack, and stoveman ..	365	1.55	1	357	357	554	554	0.98	566
Dumpers	365	1.40	5	907	181	1,271	254	2.48	511
Engineers	365	1.75	1	9	9	16	16	0.02	649
	365	2.00	8	775	97	1,549	194	2.12	730
Total	365	1.90½	9	784	87	1,565	174	2.14	729
Engineer and laborer	365	1.60	1	5	5	8	8	0.01	584
Fillers, bottom	365	1.50	31	6,236	201	9,308	300	17.08	545
Fillers, top	365	1.50	8	902	113	1,349	169	2.47	516
	365	1.55	4	463	101	626	157	1.10	567
Total	365	1.51½	12	1,306	109	1,975	165	3.57	552
Foreman	365	2.42	1	364	364	881	881	1.00	883
Foreman, iron handlers	365	2.50	1	364	364	910	910	1.00	913
Foreman and laborer	365	1.55	1	176	176	273	273	0.48	564
Iron handlers	365	1.70	25	2,009	80	3,412	136	5.50	620
Iron handler and laborer	365	1.53½	1	18	18	28	28	0.05	564
Keepers	365	1.90	2	695	348	1,328	681	1.90	697
Keepers' helpers	365	1.55	11	2,158	196	3,329	303	5.91	563
	365	1.65	3	899	296	1,457	486	2.44	598
Total	365	1.57	14	3,047	218	4,766	343	4.35	573
Keepers' helper and laborer ..	365	1.38½	1	13	13	18	18	0.04	505
Laborers	365	1.41½	62	3,468	56	4,907	79	9.50	516
Laborers and runners	365	1.48	2	224	112	331	166	0.61	539
Moulders	365	1.75	1	22	22	39	39	0.06	647
	365	2.25	3	306	153	659	345	0.44	822
Total	365	2.22	3	328	100	728	243	0.90	810
Runners	365	1.55	6	455	76	699	117	1.25	561
Stovemans	365	1.65	8	641	214	1,072	357	1.76	610
Weighmen	365	1.55	3	722	241	1,105	368	1.98	520
The establishment		1.58½	221	20,700	121	42,371	192	73.76	574

a The earnings here shown are for one year. The statement for this establishment on page 51 is for six months only.

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TABLE XVI.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

A.—Pig Iron: NORTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 32—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employes.	Days of work done.		Earnings.		Necessary employes.
				Total.	Average.	Total.	Average.	
Laborers	313	\$1.00	3	285	98	\$302	\$101	0.94
	313	1.40	154	5,233	34	7,376	48	18.73
	313	1.50	26	1,430	55	2,141	82	4.80
	313	1.60	9	70	9	124	14	0.25
Total	313	1.41	193	7,016	37	9,512	52	22.51
Limestone breakers	363	1.50	4	751	186	1,121	270	2.00
Machinist	313	2.01	1	299	299	781	781	0.90
Ore breakers	363	1.50	11	801	73	1,182	107	2.19
Repairer, car	313	1.80	1	352	352	563	563	1.12
Stockers and water tenders	363	1.67	3	642	321	1,071	357	1.76
Storemen	363	1.85	2	623	313	1,010	505	1.71
Teamster (with team)	313	2.40	1	9	9	21	21	0.03
Watchman	363	1.50	1	317	317	473	473	0.87
The establishment		1.70	321	28,963	90	49,296	154	83.72

ESTABLISHMENT No. 41.

Carpenter	142	\$2.00	1	142	142	\$284	\$284	1.01
Carpenter and laborer	143	1.35	1	145	145	196	196	1.01
Engineers	167	2.00	2	334	167	668	334	2.00
Fillers	167	1.50	10	1,441	144	2,162	216	8.63
Fillers, top	167	1.65	2	335	168	553	377	2.01
Foreman	167	2.25	1	169	169	379	379	1.01
Iron barrow man	167	1.65	1	78	78	129	129	0.47
Iron movers	167	1.37½	1	130	130	186	186	0.78
	167	1.50	6	857	143	1,268	211	5.13
	167	1.68	2	316	158	624	261	1.80
Total	167	1.51½	9	1,308	145	1,673	210	7.80
Iron mover and moulders' helper	167	1.57	1	167	167	262	262	1.00
Keepers	167	1.85	2	338	169	606	303	1.08
Laborers	143	1.15½	19	794	42	913	48	5.56
	143	1.25	25	2,593	104	3,169	127	18.13
Total	143	1.20½	44	3,387	77	4,082	83	22.69
Laborer and slagman	167	1.35	1	134	134	181	181	0.50
Laborer and stock breaker	167	1.30	1	151	151	106	106	0.60
Moulders	167	1.65	2	331	110	546	182	1.98
Moulders helpers	167	1.50	2	316	158	474	237	1.80
Ovenmen	167	1.75	2	339	169	577	289	1.07
Slagmen	167	1.50	7	837	120	1,235	179	5.01
Stableman	167	1.63½	1	166	166	270	270	0.99
Stock breakers	167	1.37½	11	1,522	138	2,083	190	9.11
Timekeeper	167	1.63½	1	167	167	273	273	1.08
The establishment		1.45½	103	11,783	114	17,161	187	74.21

a The earnings here shown include amounts paid a few employes not in the pig iron department, which it was impossible to exclude. The statement for this establishment on page 51 is for pig iron only.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

A.—Pig Iron: NORTHERN DISTRICT OF THE UNITED STATES—Concluded.

ESTABLISHMENT No. 83—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ée.	Days of work done.		Earnings.		Neces- sary em- ployée.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Laborers—concluded	79	\$1.00	1	15	15	\$15	\$15	0.19	\$78
	79	1.15	4	132	23	150	23	1.67	90
	79	1.25	4	232	58	286	72	2.94	97
	79	1.37½	2	60	25	86	43	0.87	100
Total	79	1.20	12	464	39	557	46	5.87	96
Laborers, furnace	79	1.10	1	84	84	98	98	1.06	87
	79	1.15	1	72	72	83	83	0.91	91
Total	79	1.13	2	156	78	176	83	1.97	89
Machinist	79	1.65	1	78	78	129	129	0.90	131
Scrapman	92	1.80	1	5	5	9	9	0.05	166
Slagmen	92	1.87	4	363	91	679	170	3.95	172
Stableman	92	1.15	1	92	92	105	105	1.00	103
Stock unloader	79	1.40	1	20	20	28	28	0.25	111
Teamsters (with teams)	79	2.00	3	151	50	453	151	1.91	237
The establishment .....	.....	1.52½	48	2,106	65	2,729	90	25.44	123

ESTABLISHMENT No. 84.

Blacksmith	104	\$1.35	1	104	104	\$141	\$141	1.00	\$141
Carpenter	104	2.00	1	20	20	40	40	0.19	208
Cinder tappers	122	1.20	4	419	105	501	125	3.43	146
Cinder tapper and gutterman ..	122	1.28½	1	7	7	9	9	0.06	157
Cinder tapper and laborer	122	1.13½	1	44	44	50	50	0.36	139
Cinder tappers' helpers	122	1.10	3	216	72	238	79	1.77	134
Conductor	122	1.25	1	94	94	117	117	0.77	153
Engineers	122	1.45	2	129	65	187	94	1.06	177
	122	1.65	1	115	115	190	190	0.94	203
Total	122	1.54½	3	241	81	377	128	2.00	189
Fillers, bottom	122	1.20	8	677	85	807	101	5.55	145
Fillers, top	122	1.45	2	235	118	340	170	1.93	177
Fillers and laborers	122	1.09½	11	604	55	662	60	4.95	134
Guttermen	122	1.40	4	420	105	588	147	3.44	171
Keepers	122	1.45	2	231	116	335	168	1.89	177
Keepers' helpers	122	1.20	2	224	112	269	135	1.84	147
	122	1.30	2	237	119	309	155	1.94	159
Total	122	1.25½	4	461	115	578	145	3.78	153
Laborers	122	1.00	24	2,030	60	2,073	61	16.64	125
Stableman	122	1.00	1	122	122	122	122	1.00	122
Stock breaker	122	1.00	1	105	105	105	105	0.86	122
Weighmen	122	1.25	2	215	108	268	134	1.76	152
Yardmaster	122	1.50	1	122	122	183	183	1.00	183
The establishment .....	.....	1.12½	25	6,370	75	7,534	86	52.38	144

a In addition \$140 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 52 and 592.

b The earnings shown here and for this establishment on page 52, although for the same length of time, are for different periods.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Pig Iron: SOUTHERN DISTRICT OF THE UNITED STATES.

ESTABLISHMENT No. 95.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.						Condition if workmen had continuous employment.	
			Dis- ferent em- ploy- ees.	Days of work done.		Earnings.		Non- con- stant em- ploy- ees.	Conse- quent average earnings per em- ployed.	
				Total.	Aver- age.	Total.	Aver- age.			
Brakemen	334	\$1.23	1	205	205	\$254	\$254	0.61	\$117	
	334	1.23	2	181	76	204	102	0.45	461	
Total	334	1.23	3	386	119	458	152	1.06	433	
Cinder tappers	334	1.15	10	244	24	281	28	0.73	335	
	334	1.50	44	1,688	38	2,160	49	4.20	433	
	334	1.40	1	236	236	325	325	0.71	400	
	334	1.45	2	494	247	718	358	1.40	484	
Total	334	1.23	57	2,640	46	3,482	61	7.91	441	
Cinder tappers and fillers	334	1.16	4	79	20	92	23	0.24	389	
Cinder tapper and laborer	334	1.26	1	8	8	8	8	0.01	401	
Engineers	334	2.00	7	806	115	1,597	228	2.43	600	
	334	2.00	1	5	5	13	13	0.01	200	
	334	2.25	1	26	26	91	91	0.06	1,086	
Total	334	2.02	9	841	98	1,701	189	2.51	676	
Engineer and wiper	334	1.14	1	203	203	245	245	0.91	389	
Fillers	334	1.46	2	265	128	324	178	1.15	465	
Filler, bottom	334	1.33	1	3	3	4	4	0.01	445	
Fillers, stockhouse	334	1.00	8	7	7	7	7	0.07	334	
	334	1.15	100	6,146	32	7,104	37	13.40	394	
	334	1.23	2	615	308	789	395	1.24	416	
Total	334	1.16	105	6,768	35	7,896	40	20.26	389	
Fillers, top	334	1.75	2	496	248	806	403	1.40	529	
Filler and keepers' helper	334	1.32	1	3	3	4	4	0.01	445	
Fireman	334	1.60	4	680	170	1,020	255	2.04	501	
Foremen	334	2.00	1	55	55	110	110	0.16	600	
	334	2.37	2	475	238	1,125	562	1.42	791	
Total	334	2.33	3	580	177	1,236	412	1.56	778	
Iron handlers	334	1.26	2	150	75	182	91	0.45	405	
	334	1.50	3	228	76	348	116	0.68	610	
	334	1.66	1	3	3	5	5	0.01	537	
Total	334	1.40	6	381	64	535	89	1.14	469	
Keepers	334	1.75	2	560	280	1,011	506	1.74	682	
Keepers' helpers	334	1.46	15	1,324	88	1,868	125	3.20	468	
Laborers	334	1.00	27	618	23	628	23	1.25	339	
	334	1.10	1	76	76	85	85	0.23	374	
	334	1.15	4	17	4	20	5	0.06	393	
	334	1.25	1	72	72	90	90	0.22	410	
	334	1.35	4	72	18	98	25	0.22	455	
Total	334	1.07	37	885	23	921	25	2.57	369	
Laborer and stoverman	334	1.21	1	23	23	28	28	0.07	407	
Repairer, car	334	2.25	1	4	4	9	9	0.01	732	
Scrapmen	334	1.00	8	256	32	291	36	0.87	334	
Stovermen	334	1.27	4	464	116	592	148	1.30	426	
Water boys	334	1.16	3	366	119	413	138	1.07	367	
The establishment		1.34	358	17,370	49	23,287	65	32.05	448	

* The earnings here shown are for eleven months only. The statement for this establishment on page 52 is for eighteen months.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

A.—Pig Iron: NORTHERN DISTRICT OF THE UNITED STATES—Concluded.

ESTABLISHMENT No. 83—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Laborers—concluded	79	\$1.00	1	15	15	\$15	\$15	0.19	\$79
	79	1.15	4	132	33	150	38	1.67	96
	79	1.25	4	232	58	286	72	2.94	97
	79	1.37½	2	60	35	95	48	0.87	109
Total	79	1.20	12	464	39	557	46	5.87	95
Laborers, furnace.....	79	1.10	1	84	84	98	98	1.06	87
	79	1.15	1	72	72	83	83	0.91	91
Total	79	1.13	2	156	78	176	88	1.97	89
Machinist	79	1.65	1	78	78	129	129	0.90	131
Scrapman	92	1.80	1	5	5	9	9	0.05	100
Slagmen	92	1.87	4	363	91	679	170	3.95	172
Stableman.....	92	1.15	1	92	92	105	105	1.00	103
Stock unloader	79	1.40	1	29	29	28	28	0.25	111
Teamsters (with teams).....	79	2.00	3	151	50	453	151	1.91	237
The establishment.....	.....	1.82½	48	3,106	65	\$4,729	90	35.44	123

ESTABLISHMENT No. 84.

Blacksmith	104	\$1.35	1	104	104	\$141	\$141	1.00	\$141
Carpenter	104	2.00	1	20	20	40	40	0.19	208
Cinder tappers.....	122	1.20	4	419	105	501	125	3.43	146
Cinder tapper and gutterman.	122	1.28½	1	7	7	9	9	0.06	157
Cinder tapper and laborer....	122	1.13½	1	44	44	50	50	0.36	139
Cinder tappers' helpers	122	1.10	3	216	72	238	79	1.77	134
Conductor.....	122	1.25	1	94	94	117	117	0.77	153
Engineers	122	1.45	2	129	65	187	94	1.06	177
	122	1.65	1	115	115	190	190	0.94	203
Total	122	1.54½	3	244	81	377	126	2.00	189
Fillers, bottom.....	122	1.20	8	677	85	807	101	5.55	145
Fillers, top.....	122	1.45	2	235	118	340	170	1.93	177
Fillers and laborers	122	1.09½	11	604	55	662	60	4.95	134
Guttermen.....	122	1.40	4	420	105	588	147	3.44	171
Keepers	122	1.45	2	231	116	335	168	1.89	177
Keepers' helpers.....	122	1.20	2	224	112	269	135	1.84	147
	122	1.30	2	237	119	309	155	1.94	159
Total	122	1.25½	4	461	115	578	145	3.78	153
Laborers.....	122	1.00	34	2,030	60	2,073	61	16.64	125
Stableman	122	1.00	1	122	122	122	122	1.00	122
Stock breaker	122	1.00	1	105	105	105	105	0.86	122
Weighmen.....	122	1.25	2	315	108	268	134	1.76	153
Yardmaster.....	122	1.50	1	122	122	183	183	1.00	183
The establishment.....	.....	1.12½	35	6,370	75	\$7,534	86	52.38	144

a In addition \$140 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 52 and 592.
b The earnings shown here and for this establishment on page 52, although for the same length of time, are for different periods.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Pig Iron: SOUTHERN DISTRICT OF THE UNITED STATES.

ESTABLISHMENT No. 95.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.						Condition if workmen had continuous employment.	
			Different employ- ees.	Days of work done.		Earnings.		Necessary con- ployés.	Conse- quent average earnings per em- ployé.	
				Total.	Aver- age.	Total.	Aver- age.			
Brakemen	334	\$1.25	1	205	205	\$250	\$250	0.61	3417	
	334	1.25	2	161	76	204	102	0.45	451	
Total	334	1.25	3	366	119	400	158	1.00	423	
Cinder tappers	334	1.15	10	244	24	281	28	0.73	383	
	334	1.20	44	1,065	38	2,100	49	4.09	■	
	334	1.40	1	228	230	\$25	\$25	0.71	400	
	334	1.45	3	494	247	718	358	1.48	484	
Total	334	1.25	57	2,040	46	3,482	61	7.81	441	
Cinder tappers and fillers	334	1.10	4	78	20	97	23	0.34	389	
Cinder tapper and laborer	334	1.20	1	8	8	6	6	0.01	401	
Engineers	334	2.00	7	800	115	1,507	225	2.43	600	
	334	2.00	1	6	5	13	13	0.01	308	
	334	2.25	■	20	20	91	91	■	■	
Total	334	2.02½	8	841	93	1,701	189	2.51	676	
Engineer and wiper	334	1.14	1	303	303	345	345	0.91	389	
Fillers	334	1.20	3	385	128	854	178	1.15	445	
Filler, bottom	334	1.33½	1	3	3	4	4	0.01	445	
Fillers, stockhouse	334	1.00	8	7	3	7	2	0.03	334	
	334	1.15	190	6,140	32	7,104	37	18.40	306	
	334	1.25	2	615	308	769	385	1.84	418	
Total	334	1.10½	105	6,768	25	7,890	■	20.28	389	
Fillers, top	334	1.75	2	496	248	806	433	1.40	623	
Filler and keepers' helper	334	1.33½	1	3	3	4	4	0.01	445	
Firemen	334	1.60	4	680	170	1,020	255	2.04	501	
Foremen	334	2.00	1	55	55	110	110	0.18	608	
	334	2.37	2	475	238	1,125	562	1.42	791	
Total	334	2.33	8	630	177	1,238	412	1.60	778	
Iron handlers	334	1.20	2	150	75	187	81	0.45	406	
	334	1.50	3	224	76	343	116	0.68	618	
	334	1.60½	1	3	3	■	■	0.01	537	
Total	334	1.40½	6	377	64	535	89	1.14	409	
Keepers	334	1.75	2	590	290	1,011	506	1.74	603	
Keepers' helpers	■	2.40	13	1,324	89	1,969	125	■	408	
Laborers	334	1.00	27	618	23	628	23	1.85	339	
	334	1.10	1	76	76	85	85	0.23	374	
	334	1.15	4	17	4	20	5	0.05	383	
	334	1.25	1	72	72	90	90	0.22	418	
	334	1.38	4	72	18	98	25	0.22	455	
Total	334	1.07½	37	845	23	921	25	2.57	380	
Laborer and stoverman	334	1.31½	1	■	23	28	28	0.07	407	
Repairer, car	334	2.25	1	4	4	9	9	0.01	732	
Scrapmen	334	1.00	5	280	56	291	58	0.87	335	
Stovermen	334	1.27½	4	464	116	562	148	1.30	426	
Water boys	334	1.15	3	366	119	613	139	1.07	387	
The establishment		1.34	356	17,370	49	23,287	45	32.05	418	

* The earnings here shown are for eleven months only. The statement for this establishment on page 32 is for eighteen months.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Pig Iron: SOUTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 101.

Occupation.	Working days in the period.	Actual daily earnings or daily rate nearest to average daily earnings.	Actual conditions for period.				Condition of workmen had continuous employment.	
			Def. from employ-ee.	Days of work done.		Earnings.	Necessary employ-ee.	Consequent average earnings per employ-ee.
				Total.	Average.	Total.		
Blacksmiths.....	184	\$2.75	3	347	174	\$680	\$470	1.80
Blacksmiths' helpers.....	184	1.25	4	222	71	263	86	1.20
Chapmen and filers.....	184	1.75	100	4,817	26	4,976	36	21.61
Carpenters.....	174	2.00	1	44	48	100	100	4.20
	184	2.25	3	251	64	977	182	1.20
	184	2.75	1	180	160	426	426	1.61
Total.....	184	2.00	8	483	97	1,305	241	2.63
Chamber tappers.....	174	1.25	51	2,563	61	2,472	68	14.64
	174	1.40	15	235	16	324	21	1.20
	184	1.80	4	554	120	823	297	2.61
Total.....	184	1.37	70	2,373	48	4,085	66	16.30
Chamber tappers and coke fac-tors.....	184	1.25	3	34	8	30	10	0.12
Chamber tapper and iron pier.....	184	1.33	1	0	0	0	0	0.03
Chamber tappers and laborers.....	184	1.17	8	610	102	500	120	2.77
Coal wheelers.....	184	1.00	6	87	11	87	11	0.21
Coal wheelers and firemen.....	184	1.27	1	153	78	197	60	0.84
Coke drivers.....	174	1.15	23	822	23	680	20	2.84
Coke drivers and laborers.....	184	1.67	1	245	48	370	54	1.86
Coke driver and locomotive.....	184	1.00	1	147	147	156	156	0.60
Coke factors.....	184	1.00	1	2	2	2	2	0.01
	184	1.20	90	2,507	27	2,100	23	16.12
Total.....	184	1.10	90	2,900	27	2,100	22	16.12
Coke factors and laborers.....	184	1.00	20	483	17	541	19	2.00
Engine wigmen.....	184	1.15	4	269	52	247	62	1.14
Engineers.....	184	2.25	3	227	148	660	324	1.61
Engineers, competitive.....	184	2.00	3	153	92	340	375	0.60
	184	2.25	1	164	164	600	600	1.00
Total.....	184	2.12	3	367	122	1,149	263	1.00
Engineer and engineers' helper.....	174	1.75	1	100	100	706	106	0.50
Engineers' helpers.....	184	1.25	10	613	42	510	32	2.20
	184	1.50	6	776	110	1,020	177	2.66
Total.....	184	1.40	16	1,125	70	1,577	60	6.12
Engineers' helper and laborer.....	184	1.25	1	80	30	60	60	0.24
Engineers' helper and team-ster.....	184	1.25	1	113	113	127	127	0.60
Fillers.....	174	1.25	17	551	92	606	60	2.80
Fillers, up.....	184	1.75	6	696	151	1,154	250	4.62
Fillers and laborers.....	184	1.10	6	230	20	260	45	1.20
Fillers' helpers.....	184	1.50	6	777	210	1,000	173	4.64
Fireman.....	184	1.50	10	906	97	1,442	224	5.25
	184	1.75	1	184	174	320	320	1.00
Total.....	184	1.50	11	1,150	106	1,762	100	6.25
Fireman.....	184	1.50	3	300	120	600	232	1.00
Founders.....	184	2.00	1	100	100	200	200	0.60
	184	4.00	1	174	104	700	600	1.00
Total.....	184	2.00	2	300	163	1,400	732	1.00

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Pig Iron: SOUTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 101—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.					Condition if workmen had continuous employment	
			Different employ- ees.	Days of work done.		Earnings.		Necessary employ- ees.	Conse- quent average earnings per employ- ee.
				Total.	Aver- age.	Total	Aver- age.		
Inclinemen	184	\$1.15	3	310	155	\$362	\$181	1.68	\$215
Iron breakers	184	(a)	15	(a)	(a)	2,540	170	(a)	(a)
Iron carriers	184	1.50	1	202	202	311	311	1.10	282
	184	2.00	21	1,296	62	2,582	123	7.04	267
Total	184	1.93	22	1,498	68	2,893	132	8.14	255
Iron grader	184	1.00	1	153	153	300	200	0.83	361
Iron loaders	184	(a)	9	(a)	(a)	1,605	178	(a)	(a)
Iron pilers	184	(a)	2	(a)	(a)	80	40	(a)	(a)
Iron wringers	184	1.10	11	728	66	803	73	3.06	203
Keepers	184	2.00	5	714	143	1,428	285	3.88	267
Keepers' helpers	184	1.25	13	686	51	849	65	2.62	225
	184	1.45	10	834	83	1,191	119	4.53	268
	184	1.55	7	623	89	975	139	2.38	288
Total	184	1.42	30	2,123	71	3,015	101	11.53	261
Keepers' helper and laborer ..	184	1.00	1	2	2	2	2	0.01	184
Laboratory boy	184	1.00	1	118	118	113	113	0.64	176
Laborers	184	1.00	118	1,503	13	1,545	13	8.18	180
Laborers, yard	184	1.00	5	28	6	28	6	0.15	184
	184	1.10	25	863	35	961	38	4.70	204
	184	1.25	2	211	106	262	131	1.15	228
Total	184	1.13½	32	1,104	35	1,251	39	6.00	209
Machinists	184	2.50	5	694	139	1,734	347	2.77	460
Masons	184	3.25	1	18	18	59	59	0.10	603
	184	4.50	1	8	8	36	36	0.04	828
Total	184	3.65½	2	26	13	95	48	0.14	672
Master machinist	184	4.07	2	167	84	680	340	0.91	749
Ore dumpers	184	1.15	3	187	62	217	72	1.02	214
	184	1.25	4	180	83	163	41	0.71	231
Total	184	1.20	7	317	45	380	54	1.73	221
Porter	184	.98	1	153	153	150	150	0.83	180
Sand sifters	184	1.10	2	200	145	319	160	1.58	202
Scavenger	184	.50	1	178	178	89	89	0.97	92
Scrapmen	184	1.15	4	261	66	415	104	1.96	212
Stableman and teamster	184	1.30	1	198	198	275	275	1.08	256
Storekeeper	184	1.50	1	184	184	276	276	1.00	276
Stovemmen	184	1.75	9	717	80	1,236	140	3.90	322
Teamsters	184	1.00	9	501	56	502	56	2.72	184
	184	1.50	1	15	15	23	23	0.08	242
Total	184	1.01½	10	516	52	525	53	2.80	187
Weighmen	184	1.30	6	806	134	1,046	174	4.36	239
The establishment		(b)	828	(b)	(b)	654,433	66	(b)	(b)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

c The earnings here shown are for six months only. The statement for this establishment on page 62 is for one year.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

A.—Pig Iron: NORTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 38—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had con- tinuous employment.		
			Dis- ferent em- ploy- ea.	Days of work done,		Earnings.		Neces- sary em- ployea.	Conse- quent average earnings per em- ploye.
				Total.	Aver- age.	Total.	Aver- age.		
Railroad boss.....	313	\$2.00	1	297	297	\$394	\$394	0.86	903
Scalemen	365	1.60	12	2,661	330	6,266	622	10.85	577
Stockhouse men	365	1.40	6	932	159	1,350	227	2.61	521
	365	1.45	1	261	261	378	378	0.72	529
	365	1.55	14	2,822	202	4,352	311	7.78	563
Total	365	1.51	21	4,035	192	6,069	290	11.06	551
Storekeeper	365	1.40	1	14	14	20	20	0.04	521
Stevemen.....	365	1.06	1	307	307	609	609	0.84	724
	365	2.10	3	860	297	1,865	622	2.44	766
Total,.,,	365	2.06½	4	1,197	209	2,474	619	3.28	784
Timekeeper	313	2.82½	1	312	312	900	900	1.00	903
Unloaders	313	(a)	(b)	(a)	(a)	3,438	(b)	(a)	(a)
Watchmen.....	365	1.60	1	361	361	578	578	0.99	584
Water boys.....	365	.75	6	306	68	297	50	1.08	274
	365	.88	2	231	116	203	102	0.63	321
Total	365	.79½	8	627	78	500	63	1.71	291
Water tenders.....	365	2.10	2	709	355	1,495	748	1.04	770
Wipers	365	1.50	4	989	247	1,501	375	2.71	554
	365	1.67½	1	74	74	124	124	0.20	612
Total	365	1.53	5	1,063	213	1,625	325	2.91	558
Woolmen.....	365	1.45	1	73	73	108	108	0.20	540
	365	1.55	3	518	173	804	268	1.43	567
	365	1.60	1	318	318	513	513	0.87	569
Total	365	1.57	5	909	182	1,425	285	2.49	572
Yardmaster.....	365	2.25	1	291	291	655	655	0.80	822
The establishment.....	.....	(e)	(c)	(e)	(c)	4187, 077	(e)	(e)	(e)

ESTABLISHMENT No. 67.

Blacksmith.....	313	\$1.90	1	317	317	\$601	\$601	1.01	\$593
Bellermen.....	365	1.60	1	319	319	519	519	0.87	594
	365	1.70	1	35	35	60	60	0.10	626
Total.....	365	1.63½	2	354	177	579	290	0.97	597
Brakeman, locomotive.....	365	1.33½	1	246	246	341	341	0.67	506
Carpenter.....	313	1.60	1	289	289	463	463	0.92	501
Engineers, furnace.....	365	2.87	1	345	345	818	818	0.05	865
	365	3.00	1	340	340	1,021	1,021	0.03	1,096
Total.....	365	2.68½	3	685	343	1,839	920	1.83	990

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employes not given.

c No total can be made for reasons shown in the preceding footnotes.

d The earnings here shown are for one year. The statement for this establishment on page 62 is for two months only.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Pig Iron: SOUTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 103—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dis- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.
				Total.	Aver- age.	Total.	Aver- age.	
Foreman, track.....	263	\$1.64	3	238	179	\$288	\$291	0.98
Helpers.....	366	1.10	3	157	53	170	57	0.43
	365	1.15	1	13	13	15	15	0.94
	365	1.30	2	118	59	144	72	0.32
	365	1.25	6	447	74	543	91	1.21
	365	1.30	1	176	176	234	234	0.48
Total.....	366	1.25	13	987	79	1,126	87	2.48
Hot-blast man.....	265	1.15	1	238	238	276	276	0.96
Iron handlers.....	365	1.10	1	294	294	330	330	0.96
	365	1.25	2	102	51	127	63	0.50
	365	1.30	4	1,204	301	1,760	440	3.74
	365	1.00	6	372	62	568	94	1.62
	365	1.75	4	586	146	994	241	1.62
Total.....	365	1.41	17	2,680	158	2,772	222	7.31
Iron handler and keeper.....	265	1.72	1	312	312	536	536	0.85
Iron handlers and laborers.....	365	1.31	2	19	10	25	13	0.05
	364	1.62	1	182	182	247	247	0.42
Total.....	365	1.50	3	171	57	272	91	0.47
Keepers.....	265	1.35	3	704	235	1,278	426	1.93
Laborers.....	365	.40	2	38	19	15	8	0.10
	365	.50	4	860	215	418	86	2.36
	365	.80	1	51	51	30	30	0.14
	365	.85	1	124	124	113	113	0.37
	365	1.00	100	4,736	24	4,750	24	12.97
	365	1.05	26	797	31	857	32	2.18
	365	1.10	15	600	40	640	44	1.66
	365	1.25	4	340	85	434	109	0.96
Total.....	365	.98	280	7,564	39	7,291	28	26.72
Laborer and slagman.....	365	1.14	1	85	85	97	97	0.23
Laborer and water tender.....	365	1.23	1	75	75	94	94	0.21
Machinist.....	365	2.00	1	340	340	1,010	1,010	0.93
Moulders.....	365	1.25	2	318	50	147	74	0.32
	365	1.35	1	238	238	310	310	0.65
	365	1.40	2	473	158	661	220	1.20
	366	2.10	1	308	308	635	635	0.84
	365	2.50	3	327	109	812	271	0.90
Total.....	365	1.73	19	1,463	147	2,572	257	4.01
Moulder and stocker.....	365	1.22	1	144	144	177	177	0.50
Slagmen.....	365	1.15	10	1,720	109	2,004	125	4.76
Stokers.....	366	1.00	8	80	10	80	10	0.16
	365	1.10	63	1,593	26	1,757	26	4.36
	365	1.15	6	147	25	168	28	0.40
	366	1.20	1	5	5	6	6	0.01
Total.....	366	1.10	73	1,804	24	1,961	27	4.23
Water tenders.....	365	1.40	2	473	238	680	338	1.20
The establishment.....		1.34	568	33,037	56	41,327	76	90.44

a In addition \$2,571 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 52 and 53.

TABLE XVI.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Fig from: SOUTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 109.

Occupation.	Work done in the period.	Actual daily earnings in the period.	Days of work done.	Earnings.		Condition if workmen had continuous employment.	
				Average.		Necessary employees.	Consequent average earnings per employé.
				Total.	Average.		
Boiler makers	313	24. 28	7	196	28	8.25	8501
	312	2. 40	7	216	31	1.60	648
Total	313	2. 40	2	410	205	1.95	377
Boiler makers helper	313	2. 30	1	21	21	0.90	213
Boiler makers	313	2. 40	2	47	24	0.21	884
Unemployed	313	2. 40	1	116	116	0.87	323
Unemployed	313	2. 40	1	116	116	1.04	843
Unemployed	313	2. 40	1	116	116	0.18	387
Unemployed	313	2. 40	1	116	116	7.48	900
Unemployed	313	2. 40	1	116	116	0.78	467
Total	313	2. 40	2	410	205	8.44	614
Boiler makers	313	2. 40	2	410	205	0.08	227
Boiler makers	313	2. 40	2	410	205	0.91	382
Boiler makers	313	2. 40	2	410	205	0.85	609
Boiler makers	313	2. 40	2	410	205	0.08	428
Total	313	2. 40	4	820	410	1.00	384
Boiler makers	313	2. 40	2	410	205	1.77	398
Boiler makers	313	2. 40	2	410	205	1.00	675
Boiler makers	313	2. 40	2	410	205	0.76	410
Boiler makers	313	2. 40	2	410	205	0.79	421
Boiler makers	313	2. 40	2	410	205	1.55	415
Boiler makers	313	2. 40	2	410	205	0.68	377
Boiler makers	313	2. 40	2	410	205	4.46	396
Boiler makers	313	2. 40	2	410	205	11.21	410
Boiler makers	313	2. 40	2	410	205	0.85	452
Boiler makers	313	2. 40	2	410	205	0.06	444
Boiler makers	313	2. 40	2	410	205	18.61	608
Boiler makers	313	2. 40	2	410	205	0.37	416
Boiler makers	313	2. 40	2	410	205	2.37	627
Boiler makers	313	2. 40	2	410	205	0.00	530
Boiler makers	313	2. 40	2	410	205	3.33	456
Boiler makers	313	2. 40	2	410	205	0.86	818
Boiler makers	313	2. 40	2	410	205	0.25	602
Boiler makers	313	2. 40	2	410	205	1.06	697
Boiler makers	313	2. 40	2	410	205	1.31	841
Boiler makers	313	2. 40	2	410	205	1.00	1,845
Boiler makers	313	2. 40	2	410	205	0.81	487
Boiler makers	313	2. 40	2	410	205	0.81	808
Boiler makers	313	2. 40	2	410	205	0.23	391
Boiler makers	313	2. 40	2	410	205	0.79	472
Boiler makers	313	2. 40	2	410	205	1.05	500
Boiler makers	313	2. 40	2	410	205	1.79	539
Boiler makers	313	2. 40	2	410	205	4.23	812
Boiler makers	313	2. 40	2	410	205	0.01	383
Boiler makers	313	2. 40	2	410	205	0.01	494
Boiler makers	313	2. 40	2	410	205	1.42	423
Boiler makers	313	2. 40	2	410	205	8.44	654
Total	313	2. 40	10	1,000	500	8.44	649

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Pig Iron: SOUTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 109—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Keepers	365	\$2.00	3	680	227	\$1,359	\$453	1.86	\$729
Laborers	313	.67½	1	3	3	2	2	0.01	209
	313	.75	3	99	33	74	25	0.32	214
	313	.90	14	247	18	227	16	0.79	238
	313	1.00	173	6,072	35	6,071	35	19.40	313
	313	1.08	27	1,507	56	1,596	59	4.81	331
	313	1.13	13	2,061	159	2,314	178	6.58	351
	313	1.17	2	301	151	359	180	0.96	373
Total	313	1.03½	233	10,290	44	10,643	46	32.87	324
Machinist	365	2.79½	1	366	366	1,020	1,020	1.00	1,017
Mason	313	3.00	1	1	1	3	3	0.00	939
Moulder	365	1.55	1	268	268	414	414	0.73	564
Oiler	365	1.00	1	361	361	361	361	0.90	365
Runnermen	365	1.00	1	3	3	3	3	0.01	365
	365	1.17	5	821	164	973	195	2.25	433
	365	1.40	1	256	256	357	357	0.70	509
Total	365	1.23½	7	1,080	154	1,333	190	2.96	451
Stableman	365	1.07	1	289	289	320	320	0.82	391
Stovemén	365	1.00	1	18	18	18	18	0.05	365
	365	1.31½	1	70	70	92	92	0.19	480
	365	1.40	2	186	93	281	141	0.51	551
Total	365	1.42½	4	274	69	391	98	0.75	521
Sweepers	365	.50	2	102	51	51	26	0.28	183
	365	.75	5	645	129	460	92	1.77	260
	365	1.00	2	43	22	44	22	0.12	373
Total	365	.70½	9	790	88	555	63	2.17	256
Water boys	365	.50	9	908	101	458	51	2.49	184
Weighmen	365	1.35	3	780	260	1,015	338	2.14	475
The establishment		1.23	400	36,622	80	a 44,936	98	105.59	426

ESTABLISHMENT No. 114.

Blacksmith	365	\$1.50	1	320	320	\$487	\$487	0.88	\$355
Cagemen	365	1.10	1	10	10	11	11	0.03	402
	365	1.15	1	88	88	100	100	0.21	415
Total	365	1.13½	2	98	49	111	56	0.27	413
Cinder tappers	365	.90	1	238	238	210	210	0.65	322
	365	1.00	3	474	158	475	158	1.30	368
Total	365	.96	4	712	178	685	171	1.93	351
Engineers	365	1.75	6	716	119	1,233	209	1.96	339
Fillers, bottom	365	1.00	1	109	109	109	100	0.30	365
	365	1.05	19	2,260	119	2,390	126	6.19	386
	365	1.10	1	294	294	321	321	0.81	399
Total	335	1.06	21	2,603	127	2,820	134	7.30	387

a In addition \$3,028. was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 52 and 592.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Pig Iron; SOUTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 101.

Occupation.	Working days in the period.	Actual daily earnings or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. from em- ploy- ee.	Days of work done.		Earnings.	Necessary em- ploy- ee.	Conse- quent average earnings per em- ploy- ee.
				Total.	Aver- age.	Total.	Aver- age.	
Blacksmiths.....	184	\$2.75	2	347	174	\$950	\$490	1.80
Blacksmiths' helpers.....	184	1.25	4	292	71	363	32	1.53
Cagmen and filers.....	184	1.20	106	5,817	50	4,976	36	31.01
Carpenters.....	184	2.00	1	40	48	100	100	6.25
	184	2.25	3	251	64	877	192	1.36
	184	2.75	1	180	180	628	628	1.01
Total.....	184	2.48	5	485	97	1,205	241	2.63
Cinder tappers.....	184	1.35	51	2,589	51	2,472	69	14.04
	184	1.40	13	235	16	324	22	1.28
	184	1.60	4	634	129	629	507	3.01
Total.....	184	1.37	70	3,372	48	4,425	60	18.33
Cinder tappers and coke fork- ers.....	184	1.25	8	74	5	30	10	0.13
Cinder tapper and iron piler.....	184	1.25	1	8	6	8	8	0.03
Cinder tappers and laborers.....	184	1.17	5	910	102	590	120	2.77
Coal wheelers.....	184	1.00	5	57	11	87	11	0.31
Coal wheelers and firemen.....	184	1.27	2	153	78	197	90	0.84
Coke drivers.....	184	1.15	23	622	23	890	26	2.84
Coke drivers and laborers.....	184	1.07	1	345	49	370	53	1.88
Coke driver and teamster.....	184	1.06	1	147	147	154	154	0.80
Coke forkers.....	184	1.00	1	2	2	3	3	0.01
	184	1.20	95	2,507	27	2,108	23	14.11
Total.....	184	1.10	90	2,600	27	2,108	33	14.12
Coke forkers and laborers.....	184	1.00	20	493	17	541	19	2.68
Engine wipers.....	184	1.15	4	200	52	247	49	1.14
Engineers.....	184	2.25	2	207	149	668	324	1.01
Engineers, locomotive.....	184	3.00	2	183	92	840	275	0.80
	184	3.25	1	184	184	600	600	1.00
Total.....	184	3.13	3	367	122	1,149	322	1.80
Engineer and engineers' helper.....	184	1.70	1	109	109	185	106	0.80
Engineers' helpers.....	184	1.25	10	419	43	516	83	2.38
	184	1.50	6	706	119	1,069	177	2.84
Total.....	184	1.40	16	1,125	70	1,577	90	4.12
Engineers' helper and laborer.....	184	1.24	1	50	60	69	68	0.77
Engineers' helper and team- ster.....	184	1.12	1	113	113	127	127	0.61
Fallmen.....	184	1.25	17	551	32	686	40	2.90
Filers, top.....	184	1.75	6	906	151	1,555	250	4.92
Filers and laborers.....	184	1.10	6	234	39	200	43	1.28
Filers' helpers.....	184	1.50	6	707	110	1,040	173	3.84
Firemen.....	184	1.50	1	986	97	1,442	144	5.25
	184	1.75	1	184	184	323	323	1.00
Total.....	184	1.58	11	1,150	108	1,764	180	4.25
Foremen.....	184	1.65	2	700	120	606	233	1.84
Founders.....	184	2.00	1	182	182	862	531	1.00
	184	4.00	1	184	184	600	600	1.00
Total.....	184	2.01	3	366	183	1,462	717	1.80

PART II.—TIME AND EARNINGS.

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TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

C.—Pig Iron: CONTINENT OF EUROPE—Concluded.

ESTABLISHMENT No. —

[No statement of cost of production for this establishment is shown in Table I.]

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.
				Total.	Average.	Total.	Average.	
Blacksmiths.....	78	\$0.74 $\frac{1}{2}$	2	158	82	\$139	\$70	2.35
Blacksmiths' helpers.....	78	.45	3	245	82	110	37	2.14
Boiler cleaners.....	91	.29 $\frac{1}{2}$	4	330	80	65	16	2.37
Carpenter.....	78	.67 $\frac{1}{2}$	1	41	44	29	29	0.56
Cinder sorters.....	91	.34	2	133	88	32	16	1.46
	91	.54	1	20	80	43	43	0.58
Total.....	91	.35	3	213	71	78	25	2.34
Cinder tappers.....	91	.58 $\frac{1}{2}$	0	448	76	263	44	4.92
Doormen.....	91	.60 $\frac{1}{2}$	4	234	54	202	51	3.67
Engineers.....	91	.60 $\frac{1}{2}$	9	748	82	481	50	8.20
Fillers.....	91	.71 $\frac{1}{2}$	8	492	82	351	50	5.41
Fillers, top.....	91	.73 $\frac{1}{2}$	7	568	73	373	53	5.58
Foremen.....	91	.97	2	171	88	186	83	1.86
	91	1.48 $\frac{1}{2}$	1	90	90	134	134	0.90
Total.....	91	1.15	3	261	87	300	100	2.87
Foreman, machinists.....	91	1.35 $\frac{1}{2}$	1	106	106	143	143	1.16
Iron wheeler.....	91	.60 $\frac{1}{2}$	1	103	103	62	62	1.12
Keepers.....	91	1.23	1	92	92	100	100	0.90
	91	1.48 $\frac{1}{2}$	1	50	50	133	133	0.96
Total.....	91	1.35 $\frac{1}{2}$	2	171	86	233	116	1.88
Keepers' helpers.....	91	.60	5	577	75	291	52	4.14
	91	.91 $\frac{1}{2}$	5	410	82	376	75	4.51
Total.....	91	.81	10	787	78	637	64	8.65
Laborers.....	91	.29	1	74	74	31	31	0.61
	91	.38 $\frac{1}{2}$	1	43	43	16	16	0.46
	91	.45 $\frac{1}{2}$	1	74	74	33	33	0.61
	91	.58 $\frac{1}{2}$	3	230	86	131	50	2.65
Total.....	91	.49	5	449	76	221	37	4.93
Limestone breakers.....	91	.55	5	385	78	200	40	4.01
Machinists' apprentices.....	78	.28 $\frac{1}{2}$	1	72	72	19	19	8.92
Ore breakers.....	91	.53	6	422	70	224	37	4.64
Stockers.....	91	.60	16	1,252	70	754	42	13.76
Stockers' helpers.....	91	.37 $\frac{1}{2}$	2	176	88	48	24	1.91
Stovemen.....	91	.69	6	517	86	256	50	5.68
Weighmen.....	91	.58	1	73	73	42	42	0.80
	91	.62 $\frac{1}{2}$	2	179	90	112	56	1.87
	91	.72	1	97	97	70	70	1.07
Total.....	91	.64	4	349	87	254	56	3.84
The establishment.....		.64	110	8,506	78	5,478	80	93.11

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Pig Iron: SOUTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 103.

Occupation.	Working days in the period.	Actual daily earnings, or rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.
				Total.	Average.	Total.	Average.	
Blacksmiths	305	\$2.00	2	215	150	\$635	\$318	0.87
Blacksmiths' helpers	305	1.00	3	321	110	333	112	0.81
Brakeman	305	1.50	1	74	74	111	111	0.20
Brakeman dinky	305	1.33	1	306	200	267	267	0.35
Brakeman and fireman	305	1.25	1	111	111	142	142	0.30
Brakeman and laborer	305	1.25	1	4	4	5	5	0.01
Bricklayers	305	4.00	13	68	4	194	16	0.12
	305	5.00	1	5	5	25	25	0.01
Total	305	4.00	13	54	4	219	17	0.14
Careman	305	1.40	1	230	230	473	473	0.23
Cargames and filler	305	1.30	1	70	70	91	91	0.19
Carpenter	305	1.50	1	251	251	537	527	0.90
Drivers	305	1.15	2	262	181	410	305	0.90
Engineers	305	1.25	1	123	123	150	150	0.24
	305	1.50	1	86	86	54	54	0.10
	305	1.75	1	74	74	133	133	0.20
	305	2.00	3	230	110	649	216	0.90
Total	305	1.70	6	563	94	994	166	1.54
Engineers, dinky	305	1.50	3	732	251	1,105	368	2.06
	305	2.00	1	286	286	573	573	0.78
Total	305	1.61	4	1,038	260	1,678	420	2.84
Engineers, locomotive	305	2.00	1	176	176	266	266	0.48
	305	2.25	1	182	182	424	424	0.52
Total	305	2.14	2	368	184	790	395	1.01
Engineer and water tender	305	1.82	1	213	213	570	570	0.86
Fillers	305	1.00	1	27	27	27	27	0.07
	305	1.10	17	500	35	664	39	1.63
	305	1.15	26	1,435	51	1,680	68	3.53
	305	1.20	60	4,161	60	4,958	72	11.40
	305	1.25	4	729	182	913	228	1.90
Total	305	1.18	119	6,947	68	8,228	69	19.02
Fillers, top	305	1.10	1	27	27	29	29	0.07
	305	1.15	1	258	258	301	301	0.71
	305	1.25	1	236	236	298	298	0.65
	305	1.25	3	739	246	1,008	335	2.02
	305	2.20	1	234	234	537	537	0.64
Total	305	1.45	7	1,494	212	2,165	306	4.09
Filler and helper	305	1.25	1	55	55	70	70	0.15
Fillers and laborers	305	1.00	5	30	16	67	17	0.22
Filler and stocker	305	1.11	1	69	69	77	77	0.19
Firemen	305	1.00	1	21	21	21	21	0.06
	305	1.15	8	98	16	108	18	0.20
	305	1.50	1	6	6	9	9	0.02
Total	305	1.13	8	123	15	138	17	0.34
Foreman	305	2.00	1	257	257	536	530	0.70
	305	5.25	1	265	265	1,917	1,917	1.90
Total	305	2.66	2	622	211	2,447	1,224	1.70

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

D.—Pig Iron: GREAT BRITAIN—Continued.

ESTABLISHMENT No. 36—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ-ees.	Days of work done.		Earnings.		Necessary quantity of employ-ees.
				Total.	Average.	Total.	Average.	
Laborers.....	01	30.46	1	86	86	840	840	0.05
	01	.48	17	1,310	77	850	38	11.40
	01	.57	3	104	35	56	19	1.14
Total	01	.48	21	1,500	71	746	36	10.48
Liftmen	01	.74	2	157	79	117	59	1.73
	01	.75	2	163	82	124	62	1.79
Total	01	.75	4	220	80	241	60	2.52
Masons	78	.71	2	117	59	85	42	1.50
	78	.68	1	80	80	84	84	1.27
Total	78	.77	3	216	73	167	56	2.77
Masons' helpers	78	.88	1	78	78	29	29	1.00
	78	.84	4	261	75	105	41	2.88
Total	78	.51	5	379	76	193	39	4.88
Messenger	01	.26	1	91	91	25	25	—
Moulders	01	.48	3	128	43	67	22	1.41
	01	.50	17	1,183	70	699	41	13.08
	01	.71	1	85	85	58	58	0.93
Total	01	.63	21	1,396	66	812	29	15.34
Navvies	01	.54	7	378	54	206	29	4.13
	01	.57	1	73	73	44	44	0.86
Total	01	.56	8	454	57	250	31	4.99
Spare hands	01	.80	16	1,584	94	901	56	16.53
Shoe cleaner	01	.81	1	101	101	61	61	1.11
Sweepers	01	.42	2	163	91	78	39	2.00
	01	.44	2	183	76	71	26	1.67
Total	01	.44	4	334	84	149	37	3.67
Timekeeper and number taker	01	.72	1	91	91	66	66	1.00
Water tender	01	.50	1	91	91	54	54	1.06
Weighmen	01	.81	2	183	91	111	56	2.00
The establishment .....		.67	148	11,618	79	7,761	53	130.63

ESTABLISHMENT No. 37.

Blacksmiths	78	30.73	2	177	89	1130	485	2.27
	78	.77	1	101	101	79	79	1.32
	78	.97	1	78	78	76	76	1.90
Total	78	.79	4	356	89	234	71	4.50
Blacksmiths' strikers	78	.52	4	250	63	187	47	4.36
Boiler cleaners	01	.61	4	261	66	239	60	4.30
Roller feeders	01	.85	4	267	67	239	60	4.02
Carpenter	78	.73	1	107	107	78	78	1.87
Cleaners, enginehouse	78	.44	2	164	78	36	18	2.80

a The earnings here shown are for three months only. The statement for this establishment on page 81 is for six months.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Pig Iron: SOUTHERN DISTRICT OF THE UNITED STATES—Continued.

ESTABLISHMENT No. 100.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.
				Total.	Aver- age.	Total.	Aver- age.	
Blacksmiths.....	313	\$1.66	1	296	296	\$174	\$174	0.95
	313	1.05	1	314	314	630	650	1.68
Total.....	313	1.64	2	610	305	1,124	562	1.95
Blacksmiths' helper.....	313	1.00	1	281	281	281	281	0.90
Bricklayers.....	313	2.00	2	67	34	200	100	0.21
Cageman.....	303	1.48	1	316	316	453	453	0.87
Carpenter.....	313	2.00	1	326	326	658	658	1.04
Cindermen.....	303	1.00	1	65	65	69	69	0.18
	303	1.12	24	2,732	116	3,063	128	7.48
	303	1.28	1	283	283	362	362	0.78
Total.....	303	1.13	26	3,099	118	3,493	134	8.44
Drivers.....	306	.90	1	29	29	26	26	0.08
	306	1.00	1	302	302	329	329	0.91
	303	1.13	1	309	309	346	346	0.85
	303	1.17	1	30	30	35	35	0.08
Total.....	306	1.03	4	700	175	736	184	1.92
Dumpers.....	308	1.08	1	647	216	678	229	1.77
Engineers.....	303	1.85	2	714	357	1,321	661	1.06
Fillers.....	303	1.13	4	276	69	310	78	0.76
	303	1.17	1	280	280	333	333	0.78
Total.....	303	1.14	5	563	113	643	129	1.53
Fillers, bottom.....	303	1.00	7	218	33	250	37	0.68
	303	1.08	26	1,774	68	1,925	74	4.80
	303	1.13	58	4,103	71	4,013	80	11.21
	303	1.17	6	311	52	368	74	0.85
	303	1.25	2	350	178	433	217	0.96
Total.....	303	1.12	93	6,793	69	7,505	78	18.61
Fillers, top.....	303	1.13	2	135	68	154	77	0.87
	303	1.17	6	817	136	900	163	2.37
	303	1.40	1	262	262	372	372	0.09
Total.....	303	1.23	9	1,214	135	1,516	168	2.23
Filler and sweeper.....	308	.87	1	132	132	115	115	0.86
Foremen.....	303	1.61	1	81	81	150	150	0.23
	303	2.46	2	589	194	934	477	1.06
Total.....	303	2.30	3	670	100	1,104	368	1.31
Founder.....	303	4.82	1	366	366	1,870	1,870	1.00
Grader.....	303	1.25	1	206	206	371	371	0.81
Hot-tar.....	303	1.45	1	308	308	447	447	0.84
Hostler and laborer.....	303	1.07	1	84	84	90	90	0.23
Hot-blast men.....	303	1.25	1	200	200	375	375	0.79
	303	1.40	3	604	201	837	278	1.65
	303	1.49	3	631	210	963	321	1.79
Total.....	303	1.40	7	1,548	221	2,173	310	4.23
Iron handlers.....	303	1.00	1	4	4	4	4	0.01
	303	1.13	1	223	223	247	247	0.61
	303	1.17	4	614	154	615	154	1.43
	303	1.25	12	1,355	163	1,580	130	8.44
Total.....	303	1.21	18	2,002	111	2,426	135	8.43

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

E.—Muck Bar Iron: UNITED STATES—Continued.

ESTABLISHMENT No. 7—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employes.	Days of work done.		Earnings.	Necessary employes.	Consequent average earnings per employe.
				Total.	Average.	Total.		
Labors	155	\$0.75	3	21	7	\$16	86	0.14
	155	1.00	1	7	7	7	7	0.05
	155	1.25	33	230	9	261	11	1.81
	155	1.50	4	78	19	102	28	0.49
	155	1.87	2	11	36	98	49	0.46
Total	155	1.26	43	453	11	574	13	2.85
Machinist	155	1.50	1	144	144	210	210	0.88
Masons	155	2.75	1	28	28	78	78	0.19
	155	4.00	1	130	130	554	554	0.50
Total	155	2.78	2	158	54	632	318	1.00
Millwrights	155	1.50	1	87	87	108	108	0.43
	155	2.00	1	28	28	56	56	0.18
Total	155	1.64	2	88	48	156	78	0.61
Mixers	143	1.25	4	153	38	191	48	1.07
Ore wheeler	143	1.65	1	87	87	161	161	0.61
Physician	143	1.25	1	88	88	122	122	0.60
Puddlers	143	8.00	1	1	1	3	3	0.01
	143	3.39	6	424	71	1,436	240	2.97
	143	8.02	31	1,218	58	4,416	210	8.53
	143	3.74	11	823	60	2,479	225	4.84
	143	4.06	2	133	42	508	169	0.87
	143	4.25	1	43	43	183	183	0.00
	143	4.87	7	191	27	874	125	1.34
	143	4.77	6	190	32	897	151	1.23
	143	5.14	1	43	43	221	221	0.30
	143	6.00	1	2	2	12	12	0.01
Total	143	3.80	50	2,900	50	11,039	20,229	5.44
Puddlers and puddlers' helpers.	143	2.44	1	36	36	88	88	0.35
	143	2.79	1	158	158	427	427	1.19
Total	143	2.65	2	194	97	615	256	1.36
Puddlers' helpers	143	1.53	6	54	11	83	17	0.28
	143	1.74	17	530	35	1,024	60	4.12
	143	1.89	31	1,639	50	2,507	94	10.76
	143	2.08	3	63	21	121	44	0.44
Total	143	1.84	50	2,245	40	4,145	74	15.70
Pullers at squeezers	143	1.25	7	175	25	237	34	1.22
Rollers	143	3.19	2	193	51	617	259	1.13
Roughers	143	1.89	1	85	85	169	169	0.50
	143	2.72	2	150	75	408	204	1.05
	143	2.74	3	161	54	442	147	1.13
Total	143	2.57	6	398	66	1,019	170	2.77
Stockers	155	1.50	2	206	103	309	185	1.23
	155	1.88	1	61	61	115	115	0.39
Total	155	1.59	3	267	89	424	141	1.72
Stocking boss	155	3.25	1	104	104	336	336	0.67
Toolman	155	1.37	1	113	113	153	153	0.74
Weighmen	155	1.75	4	310	79	620	128	2.04
The establishment	2,284	2.28	247	10,777	64	25,623	104	73.67

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

E.—Muck Bar Iron: UNITED STATES—Continued.

ESTABLISHMENT No. 9.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Different employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.	Consequent average earnings per employ-ee.
				Total.	Average.	Total.	Average.		
Ashmen	313	\$1.25	1	318	316	\$394	\$394	1.01	\$396
	313	1.50	2	328	164	492	346	1.05	470
Total	313	1.375	3	644	215	886	295	2.06	621
Blacksmith	313	2.25	1	138	136	306	306	0.43	704
Blacksmiths' helper	313	1.40	1	187	187	264	264	0.60	442
Carpenter and millwright	313	1.88	1	79	79	149	149	0.25	590
Catchers	286	2.54	2	446	223	1,135	568	1.56	728
Cindermen	313	1.25	4	432	108	538	135	1.38	560
Drag-boys	286	1.88	2	446	223	838	419	1.96	537
Engineers	313	1.66	2	638	318	1,647	524	2.03	810
Firemen	313	1.07	1	14	14	15	15	0.04	838
	313	1.25	4	577	144	720	180	1.84	581
	313	1.47	1	273	273	527	527	0.87	610
Total	313	1.47	6	844	144	1,272	212	2.78	611
Hookers-up	286	2.16	2	446	223	964	482	1.56	610
Laborers	313	.50	1	51	51	28	28	0.16	100
	313	1.02	1	211	211	218	215	0.67	319
	313	1.32	24	672	28	781	33	3.15	364
	313	1.25	44	4,733	108	5,673	133	15.12	439
	313	1.34	1	13	13	18	18	0.04	356
	313	1.60	1	57	57	80	80	0.18	473
Total	313	1.21	72	5,737	80	6,979	97	18.32	341
Machinists	313	2.25	1	113	113	254	254	0.36	704
	313	2.50	3	43	15	114	38	0.14	720
Total	313	2.33	4	156	40	368	92	0.50	728
Mason	313	6.37	1	250	250	1,650	1,650	0.63	1,994
Mason's helper	313	1.12	1	191	191	216	216	0.61	334
Puddlers	286	2.86	11	2,502	227	9,708	883	8.73	1,110
Puddlers' helpers	286	2.23	6	651	109	1,456	243	2.28	640
	286	2.42	11	2,502	227	6,050	550	8.73	682
Total	286	2.46	17	3,153	185	7,508	442	11.03	681
Roll turner	313	6.00	1	31	31	189	180	0.10	1,028
Rollers	286	4.29	2	446	223	1,913	937	1.56	1,207
Rollers' helpers	286	1.35	2	446	223	602	301	1.56	380
	286	1.42	2	446	223	638	318	1.56	403
Total	286	1.39	4	892	223	1,218	310	3.12	397
Scrappers	286	4.94	5	1,259	252	6,231	1,244	4.40	1,410
Scrappers' helpers	286	1.25	5	1,259	252	1,574	315	4.40	358
	286	3.04	5	1,259	252	3,829	766	4.40	870
Total	286	2.14	10	2,518	252	2,403	540	6.80	614
Stockers	286	1.35	2	664	221	896	290	2.32	384
	286	1.81	3	664	223	1,211	604	2.34	518
Total	286	1.58	5	1,333	222	2,107	351	4.66	483
Stockers, boss	286	2.45	1	224	222	547	547	0.78	702
	286	4.10	2	224	112	918	459	0.78	1,173
Total	286	2.27	3	447	112	1,465	486	1.56	673

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

E.—Muck Bar Iron: UNITED STATES—Continued.

ESTABLISHMENT No. 9—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployee.
				Total	Aver- age.	Total	Aver- age.		
Teamsters	313	\$1.25	1	40	40	\$49	\$49	0.13	\$383
	313	1.35	1	319	319	431	431	1.02	423
Total	313	1.33½	2	359	180	480	240	1.15	418
Watchman	365	1.50	1	297	297	445	445	0.81	548
Weightmen.....	286	1.53½	4	543	136	883	208	1.90	439
	286	3.12½	1	245	245	765	765	0.86	593
Total	286	2.03	5	788	158	1,598	320	2.76	580
The establishment.....	.....	2.22½	109	24,685	146	54,886	325	83.14	660

ESTABLISHMENT No. 17.

Ball boys	286	\$0.61½	2	298	149	\$183	\$02	1.04	\$176
Bloom boys.....	286	1.33	2	298	149	396	198	1.04	380
Bricklayers.....	313	2.45½	1	22	22	54	54	0.07	768
	313	3.00	1	186	186	558	558	0.59	939
Total	313	2.94	2	208	104	612	306	0.66	921
Bricklayers' helpers.....	313	1.31½	1	220	220	280	280	0.70	411
	313	1.50	1	186	186	283	283	0.59	476
Total	313	1.41	2	406	203	572	286	1.29	441
Catchers.....	286	2.74½	4	565	149	1,634	409	2.08	785
Cinder wheelers	286	1.25	11	428	39	535	49	1.50	358
	286	1.30	1	41	41	53	53	0.14	370
Total	286	1.25½	12	469	39	588	49	1.64	359
Drag-outs	286	1.83	4	595	149	1,089	272	2.68	523
Engineer	286	4.12	1	187	187	770	770	0.65	1,172
Engineer's helpers.....	286	1.75	3	77	26	136	45	0.27	505
Firemen	286	1.32½	2	311	156	411	206	1.09	378
Fix grinders.....	286	1.37	8	433	54	596	75	1.51	394
Hookers-up.....	286	2.66	2	298	149	792	396	1.04	760
Laborers	313	1.20	5	200	40	242	48	0.64	379
Metal breakers	286	2.00	5	730	150	1,475	205	2.62	562
Ore stockers	286	1.37½	2	143	72	195	98	0.50	300
Puddlers	286	3.39	104	9,883	95	33,513	322	34.56	970
Puddler, boss	286	2.41½	1	193	193	659	659	0.67	977
Puddlers' helpers.....	286	2.11	104	9,881	95	20,829	200	34.56	603
Rollers	286	7.06	2	298	149	2,104	1,052	1.04	2,019
Roughers.....	286	3.32	2	298	149	990	495	1.04	950
Tap wheelers.....	286	1.40	15	420	28	568	39	1.47	400
The establishment.....	.....	2.60½	284	26,241	92	68,374	241	91.48	747

a In addition, \$2,642 was paid to outside persons for labor done at \$1.31 per day, which is included in the statements for this establishment on pages 113 and 593.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

D.—Pig Iron: GREAT BRITAIN.

ESTABLISHMENT No. 36.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. parent employ-ee.	Days of work done.		Earnings.		Necessary employ-ees.
				Total.	Average.	Total.	Average.	
Blacksmiths.....	78	90.87	1	74	74	649	8.59	932
		.73	1	80	80	50	0.62	57
		.80	1	87	87	78	1.12	79
Total.....	78	.77	3	230	77	177	2.06	80
Blacksmiths' strikers.....	78	.56	3	224	75	122	2.87	42
Boiler cleaners.....	91	.60	1	96	96	59	1.08	55
	91	.63	1	96	96	61	1.08	57
Total.....	91	.61	2	196	96	120	2.16	56
Boiler feeders.....	91	.67	2	182	91	122	2.06	61
Carpenter.....	78	.67	1	77	77	61	2.28	38
Cinder tappers.....	91	.73	1	91	91	66	1.06	66
	91	.91	1	91	91	83	1.00	83
Total.....	91	.83	2	182	91	149	2.00	75
Cleaner.....	78	.24	1	78	78	21	1.06	21
Cleaner, enginehouse.....	78	.24	1	78	78	21	1.06	21
Cleaner, office.....	78	.16	1	78	78	12	1.00	12
Engine tenders, blast.....	91	.78	2	182	91	137	2.06	69
Engine tender, electric.....	91	.69	1	124	124	85	1.00	85
Engine tenders, lift.....	91	.91	2	182	91	168	2.00	83
Fitters.....	91	1.04	2	179	86	176	1.87	94
	91	1.05	1	81	81	85	0.86	95
	91	1.06	1	87	87	92	0.96	96
Total.....	91	1.04	4	338	85	353	3.73	96
Fitters, cinder.....	91	.77	2	165	83	128	1.81	71
	91	.79	1	81	81	64	0.88	72
	91	.80	1	75	75	60	0.82	73
Total.....	91	.78	4	321	80	252	3.52	71
Fitters, coke.....	91	.63	2	303	76	183	3.33	59
	91	.64	2	156	78	99	1.71	58
Total.....	91	.63	4	459	77	287	3.04	57
Fitters, mine.....	91	.89	1	82	82	43	0.57	75
	91	.90	2	154	77	132	1.66	79
	91	.91	2	261	87	225	2.87	78
	91	.92	2	238	79	308	2.59	80
	91	.93	2	173	87	164	1.90	81
	91	.94	1	87	87	58	0.63	85
Total.....	91	.87	12	933	78	811	10.25	79
Fitters.....	78	.80	2	170	85	117	2.12	54
Fitters' helper.....	78	.25	1	78	78	22	1.00	22
Foremen.....	91	1.25	2	182	91	247	2.00	124
Foreman, engine.....	91	1.21	1	91	91	111	1.00	111
Foreman, navies.....	91	.99	1	91	91	90	1.00	90
Hot-blast men.....	91	.75	2	182	91	137	2.00	69
Keepers.....	91	1.17	1	83	83	96	0.91	103
	91	1.19	2	144	72	171	1.58	106
	91	1.20	1	74	74	89	0.81	109
Total.....	91	1.18	4	301	75	356	10.25	106

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

E.—Muck Bar Iron: UNITED STATES—Concluded.

ESTABLISHMENT No. 26—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dis- ferent em- ploy- ea.	Days of work done.		Earnings.		Neces- sary em- ployea.	Conse- quent average earnings per em- ploye.
				Total.	Aver- age.	Total.	Aver- age.		
Roughers.....	286	\$2.50	2	408	203	\$1,015	\$408	1.43	\$715
Roughers' helpers.....	286	1.50	2	319	155	465	233	1.08	429
Stable boss.....	313	2.14 ¹	1	14	14	30	30	0.04	671
Stockers.....	313	1.50	2	290	145	435	218	0.93	470
Stocker, boss.....	313	5.50	1	180	180	990	990	0.58	1,722
Teamsters.....	312	1.55	2	25	12	38	19	0.08	476
	312	1.80	1	12	12	22	22	0.04	574
Total.....	312	1.62	8	87	12	60	20	0.12	506
Watchmen.....	312	1.25	1	14	14	18	18	0.04	402
	312	1.50	1	15	15	22	22	0.05	450
	312	2.00	2	245	174	715	358	1.11	643
	312	2.15	3	334	128	817	272	1.23	666
	312	2.25	1	12	12	27	27	0.04	704
Total.....	312	2.07	8	773	97	1,599	209	2.47	647
The establishment.....	.....	1.91 ¹	272	34,060	125	a 65,204	240	117.38	535

F.—Muck Bar Iron: GREAT BRITAIN.

ESTABLISHMENT No. 36.

Foremen, puddlers.....	99	\$0.83 ¹	1	99	99	\$83	\$83	1.00	\$83
	99	1.05	1	99	99	105	105	1.00	105
	99	1.46	2	198	99	289	145	2.00	145
Total.....	99	1.21 ¹	4	396	99	482	121	4.00	121
Forge sweepers and roll scalers	99	.74	2	183	92	135	68	1.85	73
Grinding fettlers.....	99	.75	2	280	140	209	105	2.33	74
Iron sorters.....	99	.95 ¹	3	406	135	328	129	4.10	95
	99	1.01 ¹	1	134	134	136	136	1.35	100
Total.....	99	.97	4	540	135	524	131	5.45	95
Watchman.....	126	.95 ¹	1	125	125	129	129	1.07	120
Weighmen.....	99	.88	2	198	99	175	88	2.00	88
Wheelers.....	99	.76	2	258	129	198	99	2.61	76
The establishment.....	.....	.98	17	1,990	117	b 1,852	109	19.81	93

a In addition \$1,697 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 113 and 593.

b The earnings here shown are for only a part of the employes for four months. The statement for this establishment on page 113 is for all the employes for one year.

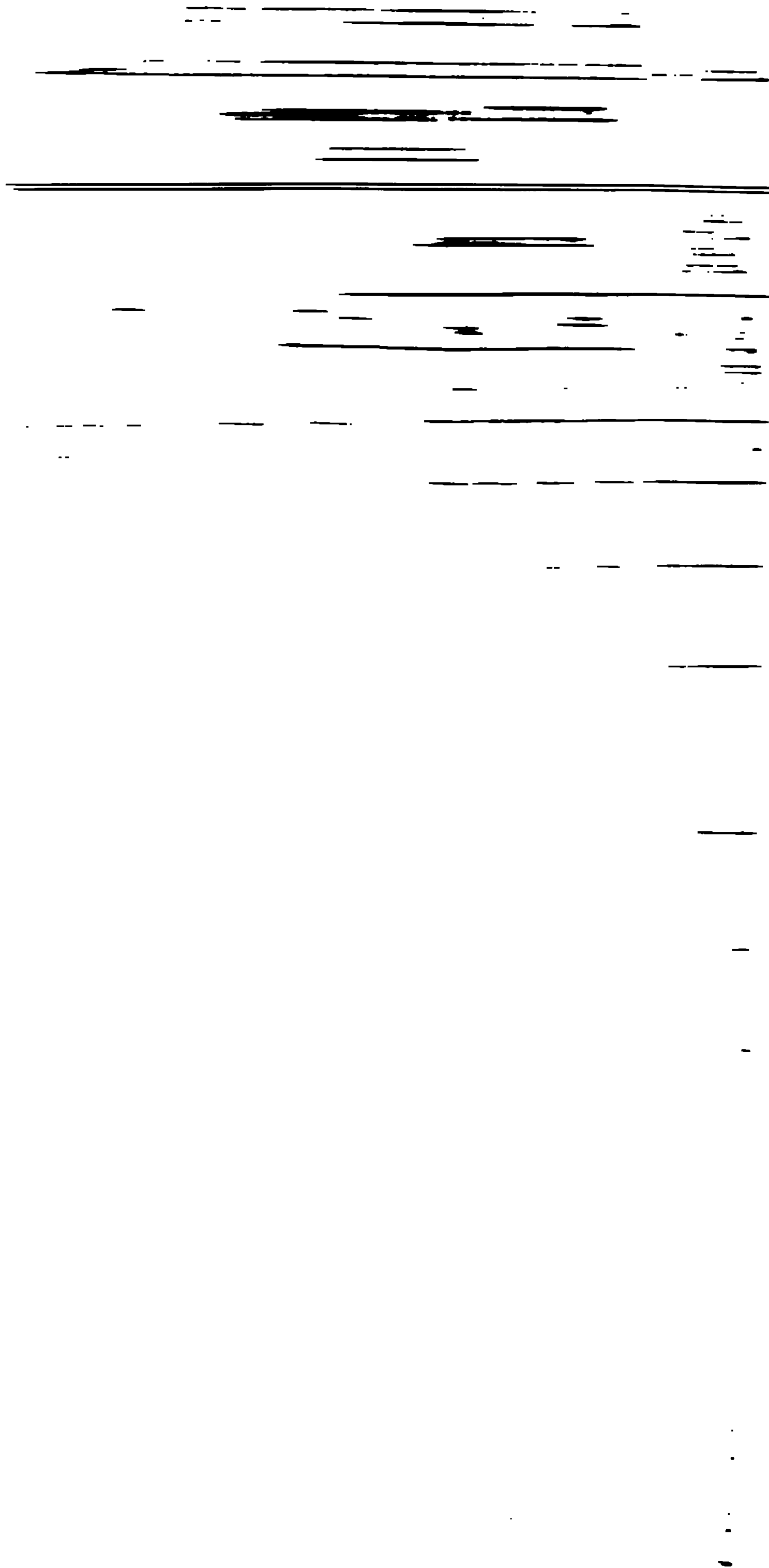


TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

G.—Finished Bar Iron: UNITED STATES—Continued.

ESTABLISHMENT No. 8—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate agreed to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. percent employed.	Days of work done.		Earnings.		Necessary employees.
				Total.	Average.	Total.	Average.	
Stickmen.....	290	\$6.70	1	241	241	\$168	\$168	5.81
	299	1.50	2	233	147	234	117	0.90
	299	1.25	2	211	106	204	129	0.71
Total.....	299	1.00	5	745	149	606	183	2.50
Straighteners.....	299	.70	7	777	111	544	78	2.00
	299	.80	4	638	168	510	128	2.18
	299	1.00	1	151	151	242	242	0.61
Total.....	299	.88	12	1,606	181	1,296	108	5.24
The establishment.....		2.44	97	19,045	196	648,423	479	63.70

ESTABLISHMENT No. 9.

Blacksmith.....	313	\$2.25	1	69	69	\$168	\$168	0.23	\$704
Blacksmith's helper.....	313	1.42	1	83	83	172	182	0.30	444
Carpenter and millwright.....	313	1.68	1	79	79	149	149	0.25	500
Catchers.....	286	2.25	2	446	223	1,004	502	1.56	644
Cinderman.....	313	1.25	1	132	132	164	164	0.42	260
Engineers.....	313	1.85	2	440	220	894	297	1.41	423
Firemen.....	313	1.25	1	11	11	13	13	0.04	370
	313	1.40	1	94	94	132	132	0.20	410
	313	1.80	1	250	250	463	463	0.83	566
Total.....	313	1.67	8	864	131	608	208	1.17	323
Heaters.....	286	7.03	2	478	239	3,318	1,659	1.65	2,010
Heaters' helpers.....	286	2.00	2	448	224	892	446	1.56	572
	286	3.00	4	692	223	2,676	669	2.12	866
Total.....	286	2.66	6	1,338	223	3,546	886	4.04	762
Laborers.....	313	1.12	26	711	27	811	81	2.27	397
	313	1.26	6	804	134	1,024	171	1.57	390
	313	1.40	1	232	232	458	458	1.03	445
	313	1.50	1	80	80	123	123	0.26	477
	313	2.00	1	3	3	6	6	0.01	0.26
Total.....	313	1.26	35	1,029	55	2,421	89	6.14	306
Machinists.....	313	2.25	1	113	113	254	254	0.26	704
	313	2.50	3	45	15	114	28	0.14	782
Total.....	313	2.33	4	158	40	368	92	0.50	729
Roll turner.....	313	5.90	1	168	168	887	887	0.47	1,876
Rollers.....	286	10.77	2	447	224	4,816	2,408	1.56	3,061
Rollers' helpers.....	286	7.50	3	670	223	1,675	558	2.34	715
Roughers.....	286	3.68	3	1,784	223	6,376	623	6.24	1,034
Shearmen.....	286	2.87	1	223	223	528	528	0.78	677
	286	2.44	1	723	223	580	580	0.78	726
Total.....	286	2.50	1	448	223	1,117	520	1.56	716

* The earnings here shown include amounts paid a few employees not in the finished bar iron department which it was impossible to exclude. The statement for this establishment on page 137 is for finished bar iron only.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

D.—Pig Iron: GREAT BRITAIN—Concluded.

ESTABLISHMENT No. —. —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Weighmen.....	135	\$0.67½	1	135	135	\$91	\$91	1.00	\$91
	135	.71	1	135	135	96	96	1.00	96
	135	.77½	2	270	135	209	105	2.00	105
Total	135	.73½	4	540	135	396	99	4.00	99
The establishment.....	.....	1.01½	187	18,137	132	\$18,412	134	134.36	137

E.—Muck Bar Iron: UNITED STATES.

ESTABLISHMENT No. 7.

Ashmen	155	\$1.30	1	99	99	\$135	\$135	0.64	\$211
	155	1.50	2	164	82	238	119	1.06	225
Total	155	1.42	3	263	88	373	124	1.70	220
Blacksmith	155	2.30	1	108	108	248	248	0.70	356
	155	1.75	4	169	40	280	70	1.03	271
Buggymen.....	155	.06½	1	3	3	2	2	0.02	103
	155	1.30	3	91	30	119	40	0.59	203
	155	1.50	2	156	78	237	119	1.01	235
Total	155	1.43	6	250	42	358	60	1.63	222
Buggyman and puddler.....	155	2.10	1	31	31	67	67	0.20	335
	155	1.50	1	7	7	10	10	0.05	221
Catchers.....	143	1.06½	2	89	45	148	74	0.62	228
	143	2.44½	2	178	89	435	218	1.24	349
Total	143	2.18½	4	267	67	583	146	1.86	312
Cindersmen	155	1.25	2	87	44	109	55	0.56	194
	155	1.75	3	181	60	316	105	1.17	271
Total	155	1.58½	5	268	54	425	85	1.73	246
Coal wheelers	155	1.50	5	208	42	318	63	1.34	233
Drag-outs.....	143	1.70	3	113	38	192	64	0.79	243
	148	1.82½	4	239	60	436	109	1.67	261
Total	143	1.78½	7	352	50	628	90	2.46	255
Engineers	155	2.00	3	203	68	410	137	1.32	310
	143	2.86½	1	157	157	450	450	1.10	410
	155	1.50	1	16	16	24	24	0.10	233
Hookers-up.....	143	.06½	1	3	3	2	2	0.02	95
	143	1.23	9	317	35	390	43	2.22	176
	143	1.42	2	91	46	129	65	0.04	203
Total	143	1.27	12	411	74	521	43	2.88	181

a The earnings here shown, though for only a part of the employés, are thought to be fairly representative.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

H.—Finished Bar Iron: GREAT BRITAIN—Continued.

ESTABLISHMENT No. 39—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ee.	Days of work done.		Earnings.	Neces- sary em- ployee.	Conse- quent average earnings per em- ployee.
				Total.	Aver- age.	Total.	Aver- age.	
Joiner	108	\$1.20	1	108	108	\$121	\$121	0.94
Laborers	108	.89	3	345	124	173	87	2.39
	108	.75	1	144	144	100	100	1.33
	108	.85	1	90	90	77	77	0.83
Total	108	.74	4	482	121	359	90	4.48
Painters	99	1.00	3	315	105	326	118	2.17
Pilers	99	.79	1	80	80	62	62	0.81
	99	.81	3	186	94	161	77	1.90
	99	.68	1	80	80	73	73	0.86
Total	99	.81	4	354	89	289	72	3.90
Plate layers	99	.77	3	230	115	176	86	2.82
Roll raggers	99	.78	1	123	123	96	90	1.24
Roll scutlers	99	.67	1	118	118	79	70	1.19
	99	.70	3	176	88	123	62	1.78
Total	99	.68	3	294	96	202	67	2.97
Rollers	99	1.53	3	173	87	265	133	1.76
	99	2.38	4	331	83	789	197	3.84
	99	3.66	3	184	97	606	206	1.96
Total	99	2.36	8	668	87	1,649	206	7.05
Rollers' helpers	99	.77	4	242	97	290	73	3.92
	99	.85	4	308	92	313	78	3.73
	99	.69	2	164	97	193	97	0.98
	99	1.01	4	368	92	373	83	3.72
	99	1.09	2	136	68	118	75	1.27
	99	1.46	2	181	97	283	143	1.96
	99	1.58	4	277	68	430	108	2.73
	99	1.82	4	346	87	631	156	2.49
	99	2.00	2	164	97	329	195	1.69
	99	2.19	4	330	88	851	214	3.94
	99	2.31	2	194	97	448	224	1.98
Total	99	1.43	34	3,044	90	4,363	128	30.78
Rollers' helpers (boys)	99	.36	2	138	68	50	26	1.27
	99	.42	4	348	92	137	39	3.72
	99	.46	4	368	92	172	43	3.73
	99	.61	3	136	68	83	42	1.37
	99	.67	1	88	98	65	65	0.98
Total	99	.47	13	1,106	83	627	41	11.17
Storekeeper	99	.97	1	60	90	96	96	1.00
Straightener	99	1.21	1	127	127	154	154	1.25
Warehousemen	108	.80	1	108	108	87	87	1.00
	108	1.05	1	129	128	140	140	1.19
Total	108	1.00	3	336	118	237	119	2.18
Wash heaters	99	2.27	3	166	98	423	212	1.88
Wash heaters' helper	99	.71	1	116	116	83	83	1.17
Weighmen	99	.91	1	110	110	94	94	1.11
	99	1.18	1	126	126	116	116	1.27
	99	1.18	1	99	99	114	114	1.08
Total	99	.96	3	335	113	324	196	3.38

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

H.—Finished Bar Iron: GREAT BRITAIN—Concluded.

ESTABLISHMENT No. 29—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different em- ploy- ee.	Days of work done.		Earnings.		Necessary em- ploy- ee.
				Total.	Aver- age.	Total.	Aver- age.	
Wheelers-in	88 90	\$0.78 .88	2 3	185 183	83 92	\$145 164	\$73 82	1.87 1.85
Total	90	.84	4	308	92	309	77	3.73
The establishment.....		1.26	147	13,894	96	17,393	118	126.63

J.—Steel Ingots: UNITED STATES.

ESTABLISHMENT No. 1.

Blacksmiths.....	313 312 313	\$2.25 2.45 3.00	3 1 1	181 192 191	180 192 191	\$1,206 470 574	\$402 470 574	1.73 5.61 0.61	900 700 941
Total	313	2.43	5	954	183	2,250	450	2.96	703
Blacksmiths and blacksmiths' helpers.....	313	1.91	8	80	10	153	19	0.28	800
Blacksmith and laborer	313	1.33	1	6	6	8	8	0.92	417
Blacksmiths' helpers	313	1.50	6	141	141	1,251	215	2.75	400
Blowers, baking fan	313	1.73	3	458	153	794	265	1.46	843
Blowers, converter	313	2.79	3	296	148	827	414	0.96	874
Boilermaker.....	313	2.25	1	174	174	391	391	0.56	703
Bottom men	313 312 313	1.35 1.50 1.90	4 3 3	327 237 230	83 79 125	416 355 475	112 115 228	1.04 0.76 0.80	427 408 885
Total	313	1.57	8	814	90	1,376	142	2.00	491
Bottom men and coal handler	313	1.00	1	3	3	5	5	0.91	822
Bottom men and masons' helper	313	1.45	1	20	20	29	29	0.66	454
Bottom men and stone handler	313	1.50	1	2	2	3	3	0.91	470
Carbonizer	313	2.73	1	15	15	41	41	0.85	856
Charger	313	2.40	1	125	125	306	306	0.60	771
Chemists	365 305 365 365	1.63 1.81 3.40 8.25	1 1 1 1	46 229 269 319	46 229 269 319	75 414 954 2,625	75 414 954 2,625	0.13 0.63 0.74 0.87	506 400 1,273 3,004
Total	365	4.09	4	803	218	4,052	1,013	2.37	1,714
Cindermen.....	313	1.25	3	421	140	529	176	1.35	803
Cleaner, office.....	313	1.00	1	16	16	16	16	0.85	313
Coal handlers.....	313 312 313	1.38 1.57 1.00	5 31 3	42 137 6	8 11 2	88 215 10	12 7 3	0.13 0.44 0.02	433 491 522
Total	313	1.53	30	185	6	283	7	0.50	470
Coal wheelers	313	1.81	14	450	33	700	51	1.47	483
Coal wheeler and fireman	313	1.45	1	7	7	10	10	0.03	447
Coal wheeler and iron handler	313	2.00	1	3	3	6	6	0.01	626
Coal wheeler and laborer	313	1.50	1	40	40	60	60	0.13	470
Coal wheeler and unloader.....	313	1.80	1	30	30	47	47	0.10	480
Coke handlers	313	1.70	6	300	61	549	92	0.08	863
Coke wheelers	313	1.67	2	262	131	491	246	0.64	567

• The earnings here shown are for four months only. The statement for this establishment on page 127 is for one year.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 1—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Different employees.	Days of work done.		Earnings.		Necessary employees.	Consequent average earnings per employee.
				Total.	Average.	Total.	Average.		
Conductors	312	\$1.90	13	891	33	\$1,030	\$79	2.31	\$467
	313	1.76	4	80	25	176	44	0.32	356
	312	2.03	1	102	102	207	207	0.23	625
	313	2.17	1	29	29	63	63	0.09	680
Total	312	1.80½	19	921	48	1,476	78	■ ■ ■	562
Conductors and engineers	312	1.72	3	436	145	751	250	1 ■ ■	539
	313	1.96	1	14	14	27	27	0.04	604
Total	312	1.78	4	450	118	778	196	1.43	641
Conductor and fireman	312	1.70	1	16	16	17	17	0.08	532
Conductors and laborers	312	1.45½	4	374	68	399	100	0.08	456
Conductor and ladleman	312	2.04½	1	125	125	258	258	0.41	553
Conductor and mould cooler	312	1.66	1	134	124	206	206	0.40	529
Crane boys	312	1.12½	2	247	124	282	141	0.79	357
Cranemen, hydraulic	312	1.40	3	10	3	14	5	0.03	436
	312	1.72½	4	130	33	224	56	0.41	529
	312	1.92½	1	12	12	25	25	0.04	602
	312	2.20½	6	■ ■ ■	162	1,961	327	2.73	719
Total	312	2.31	14	1,007	72	2,224	159	3.22	661
Cranemen, scrap	312	1.25	6	142	24	191	32	0.45	421
	312	1.45	2	29	15	42	21	0.08	453
Total	312	1.30½	8	171	21	233	29	0.54	426
Cranemen and laborers	312	1.49½	3	68	23	103	33	0.23	467
Cranemen and mould coolers	312	1.44½	1	122	122	178	178	0.29	483
	312	1.75	1	28	28	49	49	0.09	548
Total	312	1.50	2	150	75	225	112	■ ■ ■	470
Cranemen and mouldmen	312	1.89½	2	225	75	420	140	0.72	584
	312	2.16½	1	144	144	312	312	0.46	673
	312	2.36½	1	77	77	182	182	0.25	740
Total	312	2.05	5	446	86	914	183	1.42	611
Cranemen and roller	312	1.49	1	65	65	97	97	0.21	467
Cranemen and runners	312	1.66	2	299	125	440	222	0.86	519
	312	1.94½	1	152	152	296	296	0.40	610
Total	312	1.76	3	451	140	742	247	1.26	553
Crushers	312	1.25	2	126	45	183	61	0.43	421
Driers	312	1.25	1	186	186	222	222	0.39	393
	312	1.25	2	158	79	215	108	0.50	426
Total	312	1.30½	3	■ ■ ■	114	447	148	1.00	408
Droppers	312	1.51	2	188	94	284	142	0.60	472
Dumpers	312	1.31	16	1,403	140	1,825	184	4.48	489
Dumpers and iron handlers	312	1.60½	2	79	■ ■ ■	119	49	0.25	471
Dumper and laborer	312	1.20	1	10	10	13	13	0.03	467

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 1—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Different employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.	Consequent average earnings per employ-ee.
				Total.	Average.	Total.	Average.		
Engineers	313	\$1.35	1	86	86	\$117	\$117	0.27	\$420
	313	1.80	1	16	16	23	23	0.05	430
	312	1.70	2	217	108	360	185	0.69	532
	313	1.75	3	218	108	550	183	1.01	547
	313	1.80	2	457	228	818	409	1.46	660
	313	2.00	1	20	20	40	40	0.08	636
	313	2.27	2	306	153	604	302	0.98	710
Total	313	1.84	12	1,417	118	2,011	218	4.52	575
Engineers, locomotive	313	2.15	7	249	36	535	76	0.80	673
Engineers and laborers	313	1.48	2	98	33	143	46	0.31	457
	313	1.52	1	18	18	33	33	0.06	574
Total	313	1.51	4	116	29	178	44	0.37	478
Engineer and rigger	313	1.91	1	205	205	393	393	0.65	606
Filers, empols	313	2.35	2	259	130	606	303	0.83	730
Firemen	313	1.83	2	22	11	40	20	0.07	508
	313	2.00	6	54	9	108	18	0.17	620
	313	2.10	4	442	108	893	223	1.38	647
Total	313	2.05	12	508	42	1,041	87	1.83	641
Firemen and laborer	313	1.80	1	2	2	3	3	0.01	470
Fireman and stocker	312	1.94	1	50	50	97	97	0.16	607
Fireman and vesselman	313	1.76	1	18	18	32	32	0.06	656
Foreman	305	4.44	1	105	115	460	460	0.79	1,620
Foreman, converter	305	4.72	2	732	366	3,461	1,731	2.91	1,720
Foremen, iron handlers	313	1.81	1	208	208	378	378	0.66	569
	313	2.00	1	248	248	496	496	0.79	626
Total	313	1.91	2	456	228	874	437	1.45	606
Foremen, laborers	365	1.83	1	12	12	22	22	0.03	600
	365	2.25	1	105	105	311	341	0.29	1,165
Total	365	2.10	1	117	59	333	182	0.32	1,133
Foremen, miscs	313	2.65	1	257	257	681	681	0.82	828
Foreman, stockers	312	4.07	1	138	138	567	562	0.44	1,775
Inspector	313	2.70	1	61	61	165	165	0.19	847
Inspector mould	313	1.25	1	192	192	240	240	0.31	391
Inspector stock	313	2.28	1	136	136	300	300	0.43	600
Iron handlers	313	1.17	8	23	3	27	3	0.07	367
	313	1.47	12	72	6	106	9	0.23	461
	313	1.86	36	1,018	50	3,196	84	6.13	522
	313	2.20	3	5	2	11	4	0.05	690
Total	313	1.85	61	2,018	33	3,342	55	6.45	318
Iron handlers and laborers ..	313	1.43	13	372	25	460	35	1.03	447
	313	1.52	1	23	21	35	35	0.07	476
	313	2.00	1	9	9	18	18	0.03	620
Total	313	1.45	15	394	24	513	34	1.13	466
Iron handler and foreman ..	313	1.39	1	46	46	64	64	0.15	635
Iron handler and stocker ..	313	1.79	1	1	1	4	4	0.01	417
Iron handlers and milners ..	313	1.46	6	37	6	55	9	0.12	465
Milners	365	1.50	2	111	56	86	28	0.30	135

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 1—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.						Condition if workmen had continuous employment.	
			Dis- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.	
				Total.	Aver- age.	Total.	Aver- age.			
Laborers.....	312	\$1.25	159	2,605	17	\$3,298	\$21	8.81	8394	
	313	1.35	25	1,398	56	1,897	76	4.47	425	
	313	1.50	2	30	15	46	22	0.10	479	
Total.....	313	1.294	186	4,123	22	5,338	29	12.18	465	
Laborers and ladlemen.....	313	1.604	1	23	33	83	53	0.11	563	
	313	2.00	1	17	17	34	34	0.05	626	
Total.....	313	1.74	2	50	25	87	44	0.16	545	
Laborers and lifters.....	313	1.394	2	338	169	471	236	1.08	436	
Laborer and mouldman.....	312	1.674	1	34	34	67	57	0.11	523	
Laborers and oilers.....	313	1.45	2	228	114	328	163	0.73	448	
Laborer and pit cleaner.....	312	1.354	1	14	14	19	19	0.04	425	
Laborers and runners.....	313	1.69	2	13	7	22	11	0.04	539	
Laborers and scrapmen.....	313	1.594	6	67	11	163	18	0.21	491	
	313	1.78	3	28	13	64	31	0.12	546	
	313	2.094	1	179	179	375	375	0.37	656	
Total.....	313	1.93	10	282	28	544	54	0.90	604	
Laborers and stockers.....	313	1.524	2	87	22	108	34	0.21	461	
Laborers and unloaders.....	312	1.394	9	179	20	250	28	0.57	437	
	313	1.594	2	183	92	292	146	0.58	499	
Total.....	313	1.494	11	362	23	542	49	1.15	469	
Laborer and vessel tender.....	313	1.454	1	209	209	304	304	0.67	465	
Ladle stoppers.....	313	1.25	2	4	2	5	3	0.01	391	
	313	3.704	1	164	164	608	608	0.52	1,160	
	313	4.454	1	11	11	49	49	0.04	1,394	
Total.....	313	3.79	4	179	45	692	166	0.57	1,166	
Ladlemen.....	313	1.35	2	161	81	215	108	0.51	416	
	312	2.374	4	569	142	1,350	338	1.82	743	
	313	2.614	2	318	169	577	289	0.70	828	
	313	2.804	2	223	112	638	320	0.71	897	
	313	3.484	2	237	119	828	413	0.78	1,091	
Total.....	313	2.66	12	1,408	117	3,697	361	4.50	892	
Ladlemen and mouldmen.....	313	2.614	1	80	80	209	209	0.28	818	
Ladlemen and pit cleaner.....	313	1.62	1	119	119	193	193	0.39	508	
Ladlemen and runner.....	313	1.094	1	3	3	5	5	0.01	322	
Ladlemen and scrap cleaners.....	312	1.544	1	137	137	212	212	0.44	464	
	313	1.894	1	37	37	69	69	0.12	584	
Total.....	312	1.614	2	174	87	281	141	0.66	505	
Liftmen.....	313	1.35	3	492	164	674	223	1.57	429	
Machinists.....	313	2.00	3	230	86	513	172	0.83	622	
	313	2.25	1	17	17	38	38	0.05	709	
	313	2.45	7	347	30	850	121	1.11	767	
	313	2.50	1	20	20	50	50	0.06	783	
Total.....	313	2.26	12	613	84	1,433	151	2.05	707	
Machinists' helpers.....	313	1.25	4	23	6	44	19	0.11	389	
Machinists' helper and oiler.....	313	1.31	1	29	29	38	38	0.09	416	

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 1—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employes.	Days of work done.		Earnings.		Necessary employes.
				Total.	Average.	Total.	Average.	
Manganese heaters	313	\$1.25	1	68	68	\$80	\$80	0.21
	313	1.46	1	226	226	331	331	0.72
Total	313	1.44	2	292	146	420	210	0.69
Manganese heater and scrapman	313	1.47	1	149	149	220	220	0.42
Masons	313	2.20	1	5	5	11	11	0.02
	313	3.14	1	7	7	22	22	0.03
	313	3.25	4	82	16	202	51	0.20
	313	4.00	2	45	23	181	91	0.14
Total	313	2.48	8	119	15	416	52	0.38
Masons' helpers	313	1.50	7	429	61	648	93	1.37
	313	1.03	1	20	20	33	33	0.06
Total	313	1.51	8	449	56	681	85	1.43
Master mechanic	303	6.58	1	319	319	2,100	2,100	0.87
Melters	313	2.31	2	289	145	661	446	0.80
	313	2.90	1	10	10	30	30	0.03
Total	313	2.33	3	299	93	690	210	0.80
Melter and scrapman	313	2.54	1	50	50	127	127	0.16
Mould coolers	313	1.35	8	240	30	326	41	0.77
Mould cooler and stocker	313	1.70	1	26	26	45	45	0.08
Mouldmen	313	2.00	1	173	173	245	245	0.39
	313	2.23	1	91	91	200	200	0.29
	313	2.50	2	10	5	25	13	0.03
	313	2.87	7	911	130	2,618	374	0.21
	313	2.08	10	1,080	108	3,253	325	3.48
	313	3.37	4	425	106	1,412	353	1.36
	313	3.53	1	153	153	435	435	0.39
Total	313	2.90	28	2,772	107	8,288	319	8.25
Mouldman and scrap cleaner	313	2.50	1	42	42	100	100	0.13
Mouldman and scrapman	313	1.90	1	74	74	147	147	0.24
Others	313	1.25	3	160	53	201	67	0.51
	313	1.40	2	223	106	455	152	1.03
Total	313	1.36	6	483	81	655	109	1.54
Painters	313	1.50	2	25	13	38	19	0.08
	313	1.75	1	11	11	19	19	0.04
Total	313	1.56	3	36	12	57	19	0.12
Panhouse men	313	1.35	3	277	92	374	125	0.85
	313	1.40	6	500	99	824	137	1.29
Total	313	1.37	9	670	97	1,198	133	2.77
Panhouse man and scrapman	313	1.50	1	2	2	3	3	0.01
Pipe fitters	313	1.50	2	44	22	71	36	0.15
	313	1.75	1	20	20	120	120	0.26
	313	2.37	1	35	35	82	82	0.11
Total	313	1.61	6	161	40	293	73	0.32

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 1—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. percent employed.	Days of work done.		Earnings.		Necessary employees.
				Total.	Average.	Total.	Average.	
Pit cleaners.....	313	\$2.41	11	1,945	65	\$2,321	\$320	3.34
Pumpmen.....	313	1.00	2	493	201	640	325	1.28
Riggers.....	313	1.50	2	28	15	44	22	0.09
	313	2.00	1	23	23	47	47	0.07
Total.....	313	1.75	3	58	17	91	30	0.16
Roofers.....	313	1.87	1	79	79	108	108	0.25
Runners.....	313	1.83	1	6	6	11	11	0.02
	313	2.29	4	228	57	523	121	0.75
	313	2.44	4	283	96	937	234	1.22
	313	3.00	1	6	6	18	18	0.02
Total.....	313	2.39	10	■	62	1,488	140	1.99
Runner and scrap cleaner....	313	1.70	1	20	20	34	34	■
Runner and slagman.....	313	1.93	1	25	25	48	48	0.09
Runners and slagmen's helpers.	313	2.42	2	131	66	318	159	0.43
Scrap boys.....	313	.75	1	73	73	84	54	0.23
	313	.80	5	148	29	119	24	0.47
	313	1.08	1	13	13	13	13	0.04
Total.....	313	.80	7	232	33	186	■	0.74
Scrap cleaners.....	313	1.35	22	■	31	925	42	2.18
	313	1.45	3	175	58	252	84	0.56
Total.....	■	1.87	25	856	34	1,177	47	2.74
Scrap cleaner and slagman's helper.	313	1.00	1	91	91	164	164	0.29
Scrap cleaners and stockers...	313	1.56	1	97	97	152	152	0.31
	313	1.95	1	168	168	328	328	0.54
Total.....	313	1.31	2	265	133	480	240	0.85
Scrapmen.....	313	1.25	10	64	6	82	8	0.20
	313	1.35	3	3	3	4	3	0.01
	313	1.60	3	153	51	236	77	0.49
	313	1.84	7	211	30	389	55	0.67
	313	1.98	15	363	25	736	49	1.18
	313	2.26	3	80	10	68	23	0.16
	313	2.95	3	7	4	20	10	0.02
Total.....	313	1.32	42	837	30	1,328	36	2.67
Scrapmen and unloaders.....	313	1.80	2	10	5	18	9	0.03
Scrapmen and water carriers.	313	1.48	1	10	10	14	14	0.03
	313	1.82	2	11	6	20	10	0.04
Total.....	313	1.62	3	21	7	34	11	0.07
Screeners.....	313	1.43	2	7	4	10	5	0.02
Slagmen.....	313	1.40	2	87	44	111	59	0.28
	313	1.58	1	128	128	200	200	0.40
Total.....	313	1.49	3	213	71	313	106	0.68
Slurry mixers.....	313	1.35	4	248	63	333	83	0.79

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

G.—Finished Bar Iron: UNITED STATES—Concluded.

ESTABLISHMENT No. 2.—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dis- turb- ance em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ploy- ed.
				Total.	Aver- age.	Total.	Aver- age.	
Shearman's helpers.....	286	\$1.25	2	446	223	\$558	\$379	1.56
	286	1.75	3	443	223	774	357	1.55
Total	286	1.50	4	889	273	1,332	333	2.11
Stickmen.....	286	1.50	2	447	224	571	336	1.56
Straighteners.....	286	1.35	6	1,338	223	1,905	301	4.55
The establishment.....		1.58	85	11,879	136	31,350	365	39.82

H.—Finished Bar Iron: GREAT BRITAIN.

ESTABLISHMENT No. 29.

Bar lifters and stock takers....	99	\$1.00	3	312	104	\$343	\$114	2.15	3100
	99	1.12	1	115	115	121	181	1.16	113
Total	99	1.11	4	427	107	474	119	4.31	110
Bogie men	99	.97	3	279	98	373	91	2.82	97
Box pile makers.....	99	1.63	1	117	117	122	122	1.18	102
	99	1.31	1	103	103	123	125	1.04	120
Total	99	1.15	2	220	110	247	124	2.22	111
Bandlers and stock takers....	99	.87	1	87	87	78	76	0.88	98
	99	1.00	3	387	113	523	124	5.73	100
	99	1.12	4	440	110	519	125	4.44	117
	99	1.47	1	111	111	164	164	1.12	140
Total	99	1.14	11	1,205	110	1,381	126	12.17	112
Chargers	99	.99	5	540	108	375	75	8.45	99
Cutters-down.....	99	1.21	1	99	99	121	121	1.00	121
	99	1.25	2	198	97	244	122	1.95	125
Total	99	1.25	8	293	97	393	126	2.95	124
Foreman, bandlers and stock takers.	99	1.94	1	99	99	193	193	1.00	193
Foreman, mill.....	99	1.48	1	99	99	145	145	1.00	145
Foreman, roll turners.....	99	2.54	1	99	99	350	350	1.00	350
Heaters.....	99	1.85	9	742	82	1,377	153	7.49	154
	99	2.00	1	83	83	157	157	0.84	159
	99	2.37	6	477	80	1,132	188	4.82	238
Total	99	2.05	16	1,303	81	2,670	197	13.15	203
Heaters' helpers.....	99	1.00	10	800	80	375	35	8.08	100
Hookmen.....	99	.97	2	191	96	187	94	1.93	97
Horsemen	99	.81	1	135	125	161	161	1.26	80
	99	1.00	1	99	99	105	105	1.00	105
Total	99	.92	2	234	113	206	100	2.26	91

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 3—Continued.

Occupation.	Work- ing days in the period	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dis- fer- ent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.
				Total.	Aver- age.	Total.	Aver- age.	
Coke wheelers	132	\$2.18	2	146	74	\$223	\$143	1.12
Coke wheelers and laborers...	144	1.66	2	166	73	290	145	1.06
Cupolasmen	132	2.74	2	154	77	423	212	1.17
	132	4.56	2	163	81	739	370	1.23
Total	132	3.07	4	316	79	1,162	291	2.40
Engineers	144	2.10	1	177	177	372	372	1.23
	132	2.40	2	244	122	576	288	1.88
Total	132	2.25	3	421	140	948	316	2.08
Engineers, fas	132	1.60	1	88	78	140	140	0.67
	132	1.90	2	259	130	482	241	1.90
Total	132	1.70	3	347	116	622	207	2.62
Foremen, pitmen	132	4.46	2	202	101	997	454	1.53
Laborers	144	1.40	26	1,424	55	2,005	77	9.89
	144	1.60	10	836	84	1,238	124	5.81
	144	1.55	8	181	60	280	35	1.26
	144	1.60	27	1,087	38	1,860	61	7.20
	144	1.65	4	256	65	426	107	1.79
	144	1.71	3	380	127	652	217	2.64
	144	2.00	2	174	87	355	178	1.21
Total	144	1.54	75	4,200	57	6,016	88	29.80
Laborer and ladle liner	144	1.97	1	110	110	217	217	0.78
Laborers and metal wheelers...	144	1.84	2	84	47	173	87	0.65
Laborers and vessel cinders...	144	2.00	2	219	110	450	230	1.52
Laborer and weighman	144	1.61	1	116	116	187	187	0.61
Ladle liners	132	1.16	1	6	6	7	7	0.05
	132	1.81	1	65	65	118	118	0.49
	132	2.13	5	343	68	730	146	2.60
	132	2.48	1	79	79	174	174	0.63
	132	2.82	2	138	69	300	150	1.05
	132	3.06	3	165	55	507	250	1.48
	132	3.28	1	97	97	316	316	0.73
Total	132	2.55	13	914	70	2,332	179	6.93
Ladle liners and pushers	132	2.00	2	157	79	316	158	1.19
Ladle liners and vessel cinders.	132	2.00	1	11	11	23	23	0.08
	132	2.34	1	26	26	61	61	0.20
Total	132	2.24	2	37	19	53	42	0.28
Ladle liner and vessel repairer	132	1.39	1	28	28	39	39	0.21
Manganese heaters	132	3.60	4	343	86	1,234	309	2.60
Manganese heaters' helpers ..	132	2.64	2	216	109	576	288	1.63
Master mechanic	144	2.50	1	162	162	437	437	1.26
Mechanics	144	2.18	1	163	163	324	324	1.00
	144	2.40	1	160	160	385	385	1.11
Total	144	2.29	2	313	137	719	200	2.17
Mechanics' helper	144	1.50	1	104	104	158	158	0.72
Metal wheelers	132	2.26	6	413	74	1,006	168	3.37
	132	2.39	7	522	76	1,272	162	4.62
Total	132	2.33	13	977	75	2,280	175	7.46

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 1—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.						Condition if workmen had continuous employment.	
			Diff. from em-ploy-ee.	Days of work done.		Earnings.		Necessary employ-ees.	Consequent average earnings per employ-ee.	
				Total.	Average.	Total.	Average.			
Steel pourers.....	312	\$3.144	2	223	127	\$796	\$356	8.51	\$883	
Stockers.....	312	1.23	3	13	4	18	6	0.04	433	
	312	1.81	5	164	37	298	90	0.62	568	
	312	1.90	11	544	48	1,065	97	1.74	612	
	312	2.15	16	1,426	96	3,056	193	4.56	873	
	312	2.41	1	12	13	29	29	0.04	756	
	312	2.75	1	123	124	342	342	0.39	870	
Total.....	312	2.11	37	2,292	62	4,838	131	7.32	861	
Stacker and unloader.....	312	1.06	1	2	3	5	5	0.01	522	
Stone breaker.....	312	1.82	1	140	140	272	272	0.48	871	
Store wheelers.....	312	1.75	2	245	118	419	210	0.75	568	
Storekeepers.....	312	1.64	3	402	134	660	220	1.28	514	
Sweeper.....	312	1.50	1	147	147	214	214	0.47	456	
Sweeper and water carrier.....	312	1.44	1	9	9	13	13	0.03	452	
Tappers, cupola.....	312	3.06	4	490	125	1,530	283	1.59	900	
Tester.....	312	7.08	1	20	20	140	140	8.06	2,191	
Timekeeper.....	365	2.18	1	327	327	844	844	0.90	942	
Transformers.....	312	1.06	2	4	3	10	5	0.03	522	
	312	1.97	1	87	87	172	172	0.28	619	
	312	2.42	1	67	67	162	162	0.21	757	
Total.....	312	2.15	4	180	40	344	86	0.51	673	
Unloaders.....	312	1.58	11	210	20	342	31	0.68	426	
Vessel tenders.....	312	1.35	3	104	15	139	46	0.33	418	
	312	1.50	4	105	20	154	20	0.34	430	
Total.....	312	1.40	7	209	30	293	42	0.67	439	
Vesselmen.....	312	2.70	9	1,247	143	3,478	360	4.11	848	
	312	3.40	1	171	171	581	581	0.55	1,063	
	312	3.00	1	128	128	500	500	0.41	1,223	
Total.....	312	2.87	11	1,546	144	4,559	414	5.07	909	
Watchmen.....	365	1.20	1	107	107	129	129	0.29	419	
	365	1.56	11	248	26	426	39	0.79	545	
	365	3.08	1	105	105	315	315	0.29	1,095	
Total.....	365	1.75	13	560	58	874	67	1.37	638	
Water carriers.....	312	1.35	7	357	51	487	70	1.14	427	
Water tenders.....	312	1.50	2	278	139	416	208	0.89	448	
Weighmen.....	312	1.60	3	497	136	733	244	1.30	564	
The establishment.....		2.03	321	40,648	53	99,691	108	153.29	643	

ESTABLISHMENT No. 2.

Bottom builders.....	132	\$2.69	2	187	94	\$503	\$253	1.42
	132	3.25	2	211	106	686	343	1.60
Total.....	132	2.97	4	398	100	1,189	297	3.02
Cinder tapper.....	132	2.25	1	78	78	175	175	0.39
Cinder tapper and manganese heater.....	132	2.93	1	80	80	245	245	0.61
Cindermen and vesselmen.....	132	2.06	1	115	115	308	308	0.67

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 2—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Coke wheelers	132	\$7.18	2	144	74	\$328	\$163	1.12	\$388
Coke wheelers and laborers ..	144	1.86	2	166	78	290	145	1.08	268
Cupolamen	132	2.74	2	154	77	423	212	1.17	383
	132	4.56	2	162	81	739	370	1.23	602
Total	132	3.67	4	316	79	1,102	391	2.40	485
Engineers	144	2.10	1	177	177	373	372	1.23	303
	132	2.40	2	244	122	576	288	1.66	312
Total	132	2.23	3	421	140	949	310	■	304
Engineers, fan	132	1.60	1	38	38	140	140	0.67	210
	132	1.90	2	259	130	482	241	1.96	246
Total	132	1.79	3	347	116	622	267	■	237
Foremen, pitmen	132	4.49	2	202	101	907	454	1.53	563
Laborers	144	1.40	26	1,424	55	2,005	77	9.89	308
	144	1.50	10	838	84	1,238	124	5.81	213
	144	1.55	3	181	60	280	93	1.26	223
	144	1.60	27	1,037	38	1,660	61	7.20	231
	144	1.65	4	258	65	428	107	1.79	238
	144	1.71	3	380	137	652	217	2.64	247
	144	2.09	2	174	87	355	178	1.21	294
Total	144	1.54	78	4,200	57	6,616	88	29.80	222
Laborer and ladle liner	144	1.97	1	110	110	217	217	0.76	294
Laborers and metal wheelers ..	144	1.84	2	94	47	173	87	0.65	265
Laborers and vessel cinders ..	144	2.09	2	219	110	450	236	1.52	302
Laborer and weighman	144	1.61	1	116	116	167	167	0.61	232
Ladle liners	132	1.16	1	6	6	7	7	0.05	154
	132	1.31	1	65	65	118	118	0.49	240
	132	2.13	6	343	69	730	146	2.60	281
	132	2.48	1	70	■	174	174	0.23	228
	132	2.82	2	138	■	390	195	1.05	373
	132	3.06	3	165	■	597	299	1.48	404
	132	3.26	1	97	■	316	316	0.73	430
Total	132	2.53	13	914	70	2,332	179	6.93	237
Ladle liners and pushers	132	2.00	2	157	79	316	158	1.19	306
Ladle liners and vessel cinders ..	132	2.00	1	11	11	22	22	0.06	264
	132	2.34	1	26	26	61	61	0.20	310
Total	132	2.24	2	37	19	63	42	0.28	296
Ladle liner and vessel repairer ..	132	1.39	1	28	28	39	39	0.21	154
Manganese heaters	132	3.60	4	343	86	1,234	309	2.60	476
Manganese heaters' helpers ..	132	2.64	2	218	109	576	288	1.63	249
Master mechanic	144	3.50	1	182	182	637	637	1.26	504
Mechanics	144	2.12	1	153	153	334	334	1.06	314
	144	2.40	1	160	160	385	385	1.11	247
Total	144	2.39	2	312	157	719	360	2.17	321
Mechanics' helper	144	1.50	1	104	104	158	158	0.72	219
Metal wheelers	132	2.26	6	445	74	1,008	168	3.37	290
	132	2.39	7	532	76	1,272	182	4.03	216
Total	132	2.33	13	977	75	2,280	175	7.40	306

TABLE XXX.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 2—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. from average employ-ee.	Days of work done.		Earnings.		Necessary employ-ees.
				Total.	Average.	Total.	Average.	
Pitmen.....	132 133	\$3.52 3.62½	6 8	528 848	90 94	\$1,804 3,073	\$316 341	4.98 8.43
Total.....	132	3.58½	15	1,386	92	4,067	331	10.56
Pitman and pusher.....	132	2.33	1	112	112	261	261	0.83
Pitmen and sanders.....	132 133	2.78 2.07½	1 1	108 94	108 94	303 280	303 280	0.83 0.71
Total.....	132	2.81½	2	203	102	562	296	1.54
Pitmen and vessel cinders.....	132	3.06½	2	203	102	622	311	1.54
Pushers.....	132 133	2.19 2.28	1 1	78 16	78 16	171 41	171 41	0.14
Total.....	132	2.21	2	96	48	212	106	0.73
Pushers and sanders.....	132	2.15½	2	186	83	461	261	1.41
Pushers and vessel cinders.....	132	2.54½	2	33	17	84	42	0.25
Regulators.....	132 133	2.10 2.74	7 2	636 216	91 109	1,336 507	191 290	4.82 1.85
Total.....	132	2.76½	8	854	95	1,833	215	6.47
Regulator and test boy.....	132	1.67½	1	101	101	160	160	0.77
Stopper carriers and stopper setters.....	132 133	2.40½ 2.62½	4 1	318 90	80 90	1,063 358	271 358	2.41 0.75
Total.....	132	2.45½	5	417	83	1,461	238	3.16
Stopper carrier and vessel cinder.....	132	2.94½	1	■	95	■	280	0.72
Test boys.....	132	1.60	4	142	36	226	57	1.08
Vessel cinders.....	132 133	2.37½ 2.80½	1 2	32 132	32 66	76 370	76 185	0.24 1.50
Total.....	132	2.72	3	164	55	446	142	1.24
Vessel repairer.....	132	2.40	1	32	32	77	77	0.24
Vessel scrapers.....	132 133 132	1.00 1.51½ 2.17	1 2 2	4 13 100	4 7 95	4 21 412	4 11 206	0.03 0.10 1.44
Total.....	132	2.11	5	207	41	437	67	1.57
■ men.....	132 132 132	2.84 2.19½ 4.47½	2 1 2	204 36 220	102 36 110	579 115 984	290 115 492	1.55 0.27 1.67
Total.....	132	3.66	5	460	92	1,078	336	3.49
Water boys.....	132	.70	9	368	41	258	29	2.79
Weighmasters.....	132 132	1.80 2.65	1 1	70 172	70 57	125 456	125 152	0.53 1.30
Total.....	132	2.40	4	242	61	681	145	1.63
The establishment.....		2.35	218	15,664	72	436,848	109	115.06

* The earnings here shown are for only a part of the employees for twenty-four weeks. The statement for this establishment on page 153 is for all the employees for twenty-five weeks.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 5.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Bricklayers	132	\$2.00	3	4	1	\$12	\$4	0.03	\$306
	132	4.00	9	13	1	53	6	0.10	538
Total.....	132	3.82½	12	17	1	65	8	0.13	505
Bricklayers' helpers	132	1.50	2	2	1	3	2	0.02	108
Cranemen	132	1.10	2	176	88	194	97	1.83	146
Foreman	132	4.00	1	132	132	524	524	1.00	524
Gasmakers	132	2.50	2	299	150	748	374	2.27	330
Gasmakers' helpers	132	1.00	4	305	76	493	123	2.31	213
Laborers	132	1.25	5	92	18	116	23	0.70	168
Laborer and pitmen's helper..	132	1.43	1	14	14	20	20	0.11	180
Ladlomon	132	1.70	1	99	99	164	164	0.75	219
	132	1.01½	1	31	31	59	59	0.23	251
Total.....	132	1.71½	2	130	65	223	112	0.98	226
Ladlomen's helpers	132	1.32½	3	167	56	221	74	1.27	175
Ladlomen's helper and pit- men's helper.	132	1.64	1	117	117	192	192	0.89	217
Melter	132	3.03	1	135	135	409	409	1.02	400
Melter and melter's helper....	132	2.28½	1	119	119	272	272	0.90	302
Melter's helpers	132	1.81	2	142	71	257	129	1.08	239
Pitmen.....	132	1.69½	2	222	111	376	188	1.68	224
Pitmen's helpers	132	1.25	6	78	13	98	16	0.50	160
	132	1.41½	4	245	61	347	87	1.86	187
Total.....	132	1.38	10	323	32	445	45	2.45	182
Pumpmen	132	1.50	5	200	40	301	60	1.52	199
Stockers	132	1.35½	14	501	36	679	49	3.80	179
Tester	132	1.54½	1	81	81	125	125	0.61	204
The establishment .....	.....	1.78½	71	3,174	45	5,603	80	24.07	236

ESTABLISHMENT No. 7.

Ashmen.....	230	\$1.55	4	21	5	\$33	\$8	0.09	\$361
Blowers.....	230	2.80	1	9	9	25	25	0.04	639
	230	3.85	1	121	121	465	465	0.53	884
	230	4.11½	1	222	222	914	914	0.97	547
Total.....	230	3.99	3	352	117	1,404	468	1.54	917
Blowers and regulators	230	3.24½	1	193	193	626	626	0.84	746
	230	3.77½	1	205	205	774	774	0.89	868
Total.....	230	3.52	2	398	199	1,400	700	1.73	809
Bottom builders.....	230	4.89	2	328	164	1,604	802	1.43	1,125
Bottom builders' helpers.....	230	3.87½	2	378	189	1,465	733	1.64	891
Bottom builders' helper and grinder.	230	1.80	1	235	235	423	423	1.02	414
Brakemen, locomotive.....	230	1.55	3	77	26	119	40	0.33	255
Charger and pushers' helper..	230	2.97	1	105	105	312	312	0.46	683

a The earnings here shown are for five months and probably for only a part of the employés. The statement for this establishment on page 155 is for all the employés for six months.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 7—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. percent em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ploy- ee.
				Total.	Aver- age.	Total.	Aver- age.	
Cinder snappers	230	\$2.00	1	1	1	82	82	0.00
	230	3.18	1	205	205	647	647	0.80
	230	2.43	4	710	179	2,449	612	2.11
Total.....	230	2.38	6	922	154	3,098	516	4.00
Cinder snapper and cinder wheeler.....	230	1.83	1	65	65	119	119	0.28
Cinder snapper and crane-man.....	230	2.82	1	22	22	62	62	0.10
Cinder snapper and steel pourer.....	230	5.40	1	20	20	108	108	0.08
Cinder tapper and ladle liner.....	230	2.48	1	121	121	422	422	0.53
Cinder wheelers.....	230	1.55	3	60	23	107	36	0.30
Cinder wheeler and fireman.....	230	1.65	1	6	6	10	10	0.03
Cindermen	230	3.36	1	90	90	323	323	0.33
	230	3.02	2	239	120	938	489	1.04
	230	4.12	1	172	172	700	700	0.73
Total.....	230	2.93	4	561	125	1,970	493	2.18
Cinderman, furnace.....	230	1.60	1	10	10	16	16	0.44
Cinderman and grinder.....	230	2.38	1	228	223	545	545	0.99
Cinderman and metal wheelers.....	230	3.21	2	260	125	983	432	1.17
	230	2.79	1	184	184	697	697	0.80
Total.....	230	3.44	3	453	151	1,560	520	1.97
Cinderman and scrap loader.....	230	2.91	1	135	135	393	393	0.59
Coke stockers.....	230	3.10	2	349	175	1,084	542	1.52
Coke stocker and vessel re- pairer.....	230	1.85	1	169	169	313	313	0.73
Coke wheelers.....	230	3.21	2	370	185	1,190	595	1.61
Crate shifters.....	230	2.00	2	245	123	491	246	1.07
Crate shifter and iron pourer.....	230	2.57	1	153	153	394	394	0.67
Crane-man.....	230	1.70	1	132	132	221	221	0.57
Cupola firemen.....	230	6.44	2	378	169	2,437	1,219	1.64
Cupola firemen's helpers.....	230	4.21	2	399	260	1,682	841	1.73
Doormen and laborers.....	230	2.04	2	46	23	94	47	0.18
Doorman and pusher.....	230	1.95	1	43	43	84	84	0.19
Doorman and tester.....	230	1.67	1	6	6	13	13	0.03
Doorman and vessel repairer.....	230	2.02	1	40	40	93	93	0.20
Engineers, grinding.....	230	1.85	2	468	234	666	433	2.03
Engineers, locomotive.....	230	1.49	2	404	135	785	255	1.76
Foremen.....	230	4.81	2	588	189	2,733	911	2.26
Gasmakers.....	230	2.06	2	440	220	872	436	1.91
Gasmakers' helpers.....	230	1.66	2	395	142	654	218	1.72
Gasmakers' helper and ladle liver.....	230	1.90	1	40	40	76	76	0.17
Gasmakers' helper and pit cleaner.....	230	1.73	1	38	38	66	66	0.17
Gasmakers' helper and stop- per setter.....	230	1.82	1	74	74	135	135	0.32
Gasmakers' helper and tong- man.....	230	2.66	1	15	15	40	40	0.07
Gasmakers.....	230	1.85	4	336	135	993	248	2.34
Grinders' helpers.....	230	1.65	0	521	87	859	143	2.28
Grinders' helper and ladle rucker.....	230	1.71	1	222	222	380	380	0.97
Grinders' helper and metal wheeler.....	230	2.34	1	160	160	426	426	0.78
Heater and laborer.....	230	2.03	1	19	19	39	39	0.08
Ingot loaders.....	230	4.50	1	14	14	63	63	0.06
	230	3.91	1	166	166	832	832	0.72
	230	5.25	4	735	184	3,850	965	2.50
Total.....	230	5.19	6	915	153	4,734	795	3.98

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 7—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Ingot loader and mould capper.	230	\$4.32½	1	186	186	\$816	\$816	0.81	\$1,009
Ingot loader and mould swinger.	230	5.24½	1	140	140	734	734	0.61	1,206
Iron melter and regulator.....	230	2.76½	1	148	148	409	409	0.64	636
Iron pourer	230	4.01	1	185	185	742	742	0.80	922
Iron pourer and laborer.....	230	3.73½	1	218	218	814	814	0.95	859
Iron stocker.....	230	1.75	1	107	107	187	187	0.47	402
Iron stocker and scrap loader.	230	2.00	1	113	113	225	225	0.49	458
Laborers.....	251	1.40	15	213	14	302	20	0.85	356
	251	1.50	9	147	16	220	24	0.59	376
	251	1.55	10	322	17	499	26	1.28	389
	251	1.60	1	15	15	24	24	0.06	402
Total.....	251	1.50	44	607	16	1,045	24	2.78	376
Laborer and metal breaker....	251	1.06½	1	9	9	15	15	0.04	418
Laborers and metal wheelers..	251	1.50	1	10	10	15	15	0.04	377
	251	3.05½	1	174	174	532	532	0.69	767
Total.....	251	2.07½	2	184	92	547	274	0.73	746
Laborers and mould cappers..	251	1.96½	1	23	23	45	45	0.09	491
	251	2.43	1	72	72	175	175	0.29	610
Total.....	251	2.31½	2	95	48	220	110	0.38	581
Laborer and pit cleaner.....	251	1.52	1	48	48	73	73	0.19	382
Laborer and pusher	251	2.00	1	6	6	12	12	0.02	502
Laborer and regulator	251	1.50	1	16	16	24	24	0.06	377
Ladle cleaners	230	3.20	1	116	116	370	370	0.50	734
	230	3.98½	1	140	140	558	558	0.61	917
Total.....	230	3.62½	2	256	128	928	464	1.11	834
Ladle liner	230	4.52	1	188	188	850	850	0.82	1,040
Ladle liner and ladle packer ..	230	3.02	1	138	138	417	417	0.60	695
Ladle liner and vesselman.....	230	6.07	1	168	168	1,020	1,020	0.73	1,396
Ladle liner's helpers	230	3.51½	1	182	182	640	640	0.79	809
	230	3.86	1	189	189	730	730	0.82	888
Total.....	230	3.69½	2	371	186	1,370	685	1.61	849
Ladle racker	230	1.70	1	180	180	321	321	0.82	391
Limestone wheelers.....	230	1.40	1	19	19	26	26	0.08	315
	230	1.65	1	172	172	284	284	0.75	380
Total.....	230	1.02½	2	191	96	310	155	0.83	373
Loam mixer.....	230	1.65	1	206	206	336	336	0.90	375
Manganese heaters	230	5.20½	2	389	195	2,023	1,013	1.69	1,197
Manganese heaters' helpers...	230	2.00	1	3	3	6	6	0.01	460
	230	2.82	2	391	196	1,103	552	1.70	649
Total.....	230	2.81½	3	394	131	1,109	370	1.71	647
Mechanics	251	1.70	1	187	187	318	318	0.75	427
	251	1.75	1	216	216	378	378	0.86	439
	251	1.85	1	189	189	351	351	0.75	466
Total.....	251	1.77	3	592	197	1,047	349	2.36	444

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

J.—Steel Ingots: UNITED STATES—Continued.

ESTABLISHMENT No. 7—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dis- crep- ant em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ploy- ee.
				Total.	Aver- age.	Total.	Aver- age.	
Metal stocker.....	230	\$2.58	1	6	6	\$15	\$15	0.03
Metal stockers and scrap handlers.....	230	2.22	1	93	93	207	207	0.46
	230	3.19	1	124	124	336	336	0.54
Total.....	230	2.78	2	217	100	603	302	0.94
Metal washer.....	230	1.50	1	6	6	9	9	0.03
Metal wheelers.....	230	2.48	9	1,573	175	5,439	604	8.84
	230	3.84	1	99	99	380	380	8.43
Total.....	230	2.48	10	1,573	167	6,619	582	7.57
Metal wheeler and puller- down.....	230	2.18	1	33	33	71	71	0.14
Metal wheelers and scrap stockers.....	230	1.74	1	73	73	127	127	0.32
	230	2.04	1	15	15	31	31	0.07
	230	2.38	1	168	168	460	460	0.73
Total.....	230	2.18	3	256	83	555	186	1.12
Mould capper.....	230	3.74	1	101	101	714	714	0.83
Mould cappers and pushers.....	230	3.46	1	274	137	950	475	1.19
Mould setters.....	230	5.31	4	742	186	3,941	985	3.23
Mould swingers.....	230	5.13	2	380	190	1,981	976	1.65
	230	5.37	1	174	174	934	934	0.76
	230	5.67	1	160	160	507	507	0.70
Total.....	230	5.31	4	714	179	3,792	945	3.11
Mould washers.....	230	1.55	5	670	134	1,026	205	2.91
Pit cleaners.....	230	1.58	12	625	52	1,061	88	2.96
Pitman and pushers helper.....	230	3.13	1	153	153	479	479	0.67
Puller-down.....	230	1.55	1	54	54	84	84	0.23
	230	1.65	5	203	41	334	67	0.68
Total.....	230	1.62	6	257	43	418	70	1.11
Pushers.....	230	3.11	2	360	180	1,150	560	1.57
Pusher and heat catcher.....	230	2.04	1	101	101	210	210	0.44
Pusher and cranes repairer.....	230	1.90	1	89	89	175	175	0.79
Regulators.....	230	1.55	2	203	147	455	292	1.57
	230	1.64	2	207	151	428	214	1.13
	230	1.70	2	171	86	290	145	0.74
	230	1.80	1	101	101	192	192	0.44
	230	2.04	2	207	151	428	214	1.13
	230	2.20	1	210	210	747	747	0.96
	230	4.08	1	136	136	610	610	0.66
Total.....	230	2.45	11	1,450	132	3,556	323	6.30
Regulator and footer.....	230	1.68	1	223	223	375	375	0.97
Regulator and water boy.....	230	.90	1	20	20	18	18	0.09
Scrap stockers.....	230	1.55	3	90	30	139	46	0.19
	230	3.04	1	19	19	86	56	0.08
Total.....	230	1.80	4	109	37	197	49	0.47
Scrap stockers and scrapers.....	230	2.31	2	114	125	625	517	1.66
	230	2.75	1	144	144	807	567	0.86
Total.....	230	2.61	3	433	144	1,132	577	1.68

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.
J.—Steel Ingots: UNITED STATES—Concluded.
ESTABLISHMENT No. 7—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total	Aver- age.	Total	Aver- age.		
Scrap wheelers	230	\$1.55	4	23	6	\$36	\$9	0.10	\$360
Scrappers	230	3.08	1	49	49	151	151	0.21	709
	230	3.56	1	177	177	630	630	0.77	819
	230	3.81½	1	125	125	477	477	0.54	878
Total	230	3.58½	3	351	117	1,258	419	1.52	824
Steel pourers	230	6.57½	2	370	185	2,432	1,216	1.61	1,512
Stopper carriers	230	5.05	2	369	185	1,803	932	1.00	1,161
Stopper setters	230	5.09	2	368	184	1,874	937	1.60	1,171
Stoppermaker	230	2.09½	1	288	288	604	604	1.25	482
Test catchers	230	1.56	4	511	128	797	199	2.22	359
Vessel repairers	230	1.66	3	587	196	970	323	2.56	280
Vesselmen.....	230	4.23	2	366	183	1,549	775	1.59	973
	230	5.91	1	79	79	467	467	0.84	1,360
	230	6.67	1	212	212	1,414	1,414	0.92	1,534
Total	230	5.22	4	657	164	3,430	858	2.85	1,201
Watchmen	202	1.56	2	364	182	564	282	1.25	452
Water boys	230	.60	6	761	127	466	78	3.31	141
Water tenders.....	230	2.25	2	413	207	929	465	1.80	517
Weighmasters.....	230	2.66	3	390	130	1,031	344	1.70	608
Weighmen	230	1.40	2	349	175	497	249	1.52	328
	230	2.00	4	781	195	1,558	390	3.40	459
Total	230	1.82	6	1,130	188	2,055	343	4.92	418
The establishment.....		3.02½	295	32,101	109	\$97,080	329	138.42	701

K.—Steel Ingots: CONTINENT OF EUROPE.
ESTABLISHMENT No. —.

[No statement of cost of production for this establishment is shown in Table V.]

Blacksmith.....	77	\$0.67½	1	69	69	\$46	\$46	0.90	\$51
Blacksmith's helper.....	77	.34	1	67	67	23	23	0.87	26
Blowers.....	77	.81½	2	131	66	107	54	1.70	63
	77	1.12	3	208	69	233	78	2.70	86
	77	1.23½	1	70	70	86	86	0.91	95
Total.....	77	1.04	6	409	68	426	71	5.31	80
Coke carriers	77	.62	2	119	60	74	37	1.55	48
Craucman.....	77	.44	1	70	70	31	31	0.91	34
Crucible men.....	77	.64½	2	130	65	84	42	1.69	50
	77	1.26	1	73	73	92	92	0.95	97
Total.....	77	.86½	3	203	68	176	59	2.64	67
Doormen.....	77	.67½	3	220	73	149	50	2.86	52
	77	.77	1	82	82	64	64	1.06	60
Total	77	.70½	4	302	76	213	53	3.92	54

a The earnings here shown are for nine and one-half months only. The statement for this estab-
lishment on page 155 is for one year.

SAFETY INFORMATION AND THERAPEUTIC USES AND WARNINGS—Continued

A.—Good Arguments: CONSUMERS OF ENERGY—Continued.

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TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

K.—Steel Ingots: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. —. —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Foremen.....	31	\$1.55½	2	62	31	\$97	\$49	2.00	\$49
Grinders.....	27	.62½	3	39	13	24	8	1.44	17
	27	.72½	3	63	22	47	16	2.41	20
Total.....	27	.68½	6	104	17	71	12	3.85	18
Heaters.....	27	.77	2	26	13	20	10	0.96	21
Ingot loaders.....	27	.79½	11	203	19	163	15	7.70	21
Ingot loader and laborer.....	27	.66½	1	3	3	2	2	0.11	18
Iron pourers.....	27	.88	2	51	26	45	23	1.89	24
Laborers.....	27	.62½	21	213	10	135	6	7.96	17
	27	.66½	10	186	19	124	12	6.89	18
	27	.67½	5	113	23	76	15	4.19	18
	27	.72½	3	81	27	59	19	3.09	19
	27	.96½	1	23	23	22	22	0.93	26
Total.....	27	.67	40	618	15	413	10	22.89	18
Laborers, converter.....	27	.69½	6	121	20	84	14	4.48	19
Ladle cleaners.....	27	.69½	4	91	23	63	16	2.37	19
Ladle stoppers.....	27	.89½	2	48	24	43	22	1.78	24
Ladle men.....	27	.79	2	47	24	36	18	1.74	21
	27	1.00½	2	48	24	46	23	1.78	26
Total.....	27	.86½	4	95	24	82	21	3.52	23
Liners, converter.....	27	.50	2	4	2	2	1	0.16	14
	27	.62½	27	370	14	235	9	13.70	17
	27	.72½	1	20	20	14	14	0.74	19
	27	.84½	3	78	26	66	22	2.89	23
Total.....	27	.67	33	472	14	317	10	17.48	18
Lining preparers.....	27	.62½	2	59	30	37	19	2.19	17
Masons.....	27	.77	1	20	20	15	15	0.74	20
	27	.96½	2	46	23	44	22	1.70	26
Total.....	27	.89½	3	66	22	59	20	2.44	24
Masons' helpers.....	27	.39½	4	81	20	32	8	3.00	11
Mould setters.....	27	.75½	9	149	17	111	12	5.57	20
Mould setters and steel pourers.....	27	.83½	2	48	24	40	20	1.78	23
Overseers.....	31	.96½	2	63	33	63	32	2.10	30
Pit cleaner.....	27	.62½	1	30	30	19	19	1.11	17
Regulators.....	27	.62½	4	64	16	40	10	2.37	17
Slag wheelers.....	27	.82	9	174	19	143	16	6.44	22
Steel pourers.....	27	.91½	5	98	20	89	18	3.63	23
Steel pourers' helpers.....	27	.78	6	107	18	84	14	3.96	21
Stopper setters.....	27	.29	4	90	23	26	7	3.33	8
	27	.34	2	39	20	13	7	1.44	9
Total.....	27	.30	6	129	22	39	7	4.77	8
Stopper makers.....	27	.62½	1	16	16	10	10	0.59	17
	27	.75	1	8	8	6	6	0.30	20
Total.....	27	.66½	2	24	12	16	8	0.89	18
Weighman.....	27	.67½	1	29	29	19	19	1.07	18
The establishment.....	.....	.74	186	3,316	18	2,452	13	122.18	20

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

K.—Steel Ingots: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. —

[No statement of cost of production for this establishment is shown in Table V.]

Occupation.	Working days in the period.	Actual daily earnings or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.
				Total.	Average.	Total.	Average.	
Blacksmiths.....	78	98.62	3	159	73	998	947	1.92
Blacksmiths' helpers.....	78	.46	3	322	64	155	21	4.13
Blowers.....	78	.63	2	112	56	71	36	1.44
Casting carriers.....	78	.47	3	166	55	79	26	2.19
Chargers.....	78	.65	8	517	56	352	39	4.65
Chippers.....	78	.43	2	94	47	41	21	1.21
Cinderman.....	78	.39	17	519	48	489	29	16.36
	78	.73	3	165	62	135	45	2.25
Total.....	78	.62	29	1,004	58	654	31	12.37
Cinderman and ladle cleaner.....	78	.64	1	89	89	44	44	2.25
Coke stockers.....	78	.87	6	349	63	325	36	7.28
Crossmen.....	78	.46	1	67	67	89	59	2.26
Elevator tenders.....	78	.46	4	213	53	45	21	2.73
Engineers, blowing.....	78	.79	2	146	93	146	74	2.38
	78	1.29	1	90	90	116	116	1.15
Total.....	78	.66	3	276	92	364	89	4.33
Foremen, laborers.....	78	.72	3	130	63	85	32	1.67
Greasers.....	78	.32	6	41	79	21	26	5.35
	78	.47	1	14	14	13	13	8.21
Total.....	78	.34	7	455	62	221	33	5.56
Hydraulic men.....	78	.51	4	271	68	128	35	2.47
Ingot carriers.....	78	.73	3	189	63	136	45	2.42
Ingot carriers' helpers.....	78	.50	2	36	18	19	9	2.46
Iron breakers.....	78	.47	6	247	41	147	26	2.17
Iron stockers.....	78	.57	25	1,372	55	798	32	17.39
	78	.72	1	9	43	65	33	1.15
Total.....	78	.64	27	1,662	54	653	32	14.74
Keepers.....	78	.74	3	344	89	256	31	4.44
	78	.94	3	394	79	354	73	4.97
Total.....	78	.84	10	734	73	609	52	9.41
Keepers' apprentices.....	78	.29	1	14	14	4	4	6.18
Keepers' helper.....	78	.68	1	29	29	14	14	6.37
Laborers.....	78	.65	29	1,149	29	521	18	14.62
	78	.37	9	57	69	399	34	6.48
	78	1.25	1	76	76	18	18	8.21
Total.....	78	.50	39	1,302	43	644	22	21.72
Ladle cleaners.....	78	.63	4	247	62	161	4	2.17
Ladmen.....	78	.33	6	299	50	197	14	4.10
	78	.64	3	23	77	138	46	2.76
	78	.86	4	213	54	292	7	4.96
Total.....	78	.62	13	846	56	507	41	12.36
Linters.....	78	.50	1	1	1	69	69	1.64
Linters' apprentices.....	78	.51	3	100	73	67	24	1.82

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

K.—Steel Ingots: CONTINENT OF EUROPE—Concluded.

ESTABLISHMENT No. —. —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Melters.....	78	\$0.63½	8	390	49	\$248	\$31	5.00	\$50
	78	.78½	12	830	69	652	54	10.64	61
	78	1.12	1	83	83	93	93	1.06	87
	78	1.68	1	83	83	139	139	1.06	131
Total.....	78	.81½	22	1,396	63	1,132	51	17.76	64
Overseers.....	78	1.45½	2	171	86	249	125	2.19	11½
Pitmen	78	.63	30	1,692	56	1,070	36	21.69	49
	78	.79	1	72	72	56	56	0.92	61
	78	.99½	2	158	79	157	79	2.03	78
Total.....	78	.67	33	1,922	58	1,283	39	24.64	52
Runners.....	78	1.05	3	231	77	243	81	2.96	82
	78	1.24	1	64	64	80	80	0.82	98
Total.....	78	1.09½	4	295	74	323	81	3.78	85
Runners' helpers.....	78	.90	3	190	63	171	57	2.44	70
Steel pourers.....	78	.41	2	148	74	61	31	1.90	32
	78	.56½	2	119	60	67	34	1.53	44
Total.....	78	.48	4	267	67	128	32	3.43	37
Superintendents.....	78	2.11	1	89	89	188	188	1.14	165
	78	2.65	1	90	90	239	239	1.15	207
Total.....	78	2.38½	2	179	90	427	214	2.29	186
Weighmen.....	78	.57½	2	143	72	82	41	1.83	45
The establishment.....	.....	.67	256	14,683	57	9,839	38	188.23	52

L.—Steel Billets: UNITED STATES.

ESTABLISHMENT No. —.

[No statement of cost of production for steel billets is shown in Part I.]

Blacksmiths' helpers.....	202	\$1.50	2	187	94	\$283	\$142	0.93	\$306
Boilermakers' helpers.....	202	1.62	1	173	173	281	281	0.86	328
	202	1.75	1	199	199	338	338	0.99	343
Total.....	202	1.66½	2	372	186	619	310	1.86	336
Carboneers.....	202	2.28	2	259	130	500	295	1.28	400
Carpenters.....	202	1.25	1	28	28	35	35	0.14	253
	202	1.60	1	14	14	21	21	0.07	303
	202	2.20	1	187	187	412	412	0.93	415
	202	2.45	1	191	191	467	467	0.95	494
Total.....	202	2.22½	4	420	105	935	234	2.09	450
Chargers.....	202	1.75	4	12	3	21	5	0.06	354
	202	1.83	10	35	4	64	6	0.17	369
	202	2.00	17	229	13	458	27	1.13	404
	202	2.20½	18	869	49	1,962	109	4.40	446
	202	2.57	2	119	60	306	153	0.59	519
Total.....	202	2.19	51	1,284	25	2,811	55	6.35	443

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

L.—Steel Billets: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Difference from employ-ee.	Days of work done.		Earnings.		Necessary employ-ees.	Consequent average earnings per employ-ee.
				Total.	Average.	Total.	Average.		
Charger and chipper.....	202	\$1.73	1	13	13	823	633	0.08	907
Charger and furnace helper.....	202	2.50	1	2	2	5	5	0.01	505
Charger and guide.....	202	2.00	1	4	4	8	8	0.02	432
Chargers and heaters' helpers.....	202	2.12	4	304	76	778	125	1.89	432
Charger and hooker.....	202	2.70	1	126	126	341	27	0.02	847
Charger and laborer.....	202	1.50	1	22	22	30	10	0.16	316
Chargers and sweepers.....	202	1.00	2	6	3	10	5	0.03	257
Chargers and tongmen.....	202	2.10	2	47	24	90	59	0.23	623
Charger and transmitter.....	202	2.11	1	129	129	253	253	0.59	426
Chippers.....	202	1.25	1	12	12	16	16	0.06	300
	202	1.00	2	37	19	50	30	0.18	323
	202	2.00	3	292	97	564	195	1.43	404
	202	2.50	1	4	4	10	10	0.02	265
Total.....	202	1.94	7	345	48	600	171	1.71	883
Chipper and mason's helper.....	202	1.85	1	158	158	292	292	0.78	373
Cleaner, office.....	202	1.00	1	30	30	30	30	0.15	302
Conductors.....	202	1.50	8	600	67	201	100	2.87	300
Conductor and fireman.....	202	1.73	1	15	15	26	26	0.07	302
Conductor and oiler.....	202	1.20	1	33	23	46	46	0.10	322
Conductor and transmitter.....	202	1.57	1	148	148	230	230	0.73	316
Cradlemen.....	202	1.92	1	124	124	228	228	0.51	300
	202	2.50	1	4	4	10	10	0.02	505
Total.....	202	1.92	2	129	64	248	124	0.63	301
Cradlemen and tablemen.....	202	1.40	1	71	71	106	106	0.35	303
	202	1.78	1	131	131	233	233	0.65	356
Total.....	202	1.68	2	202	101	339	170	1.00	380
Cradleman and transmitter.....	202	2.00	1	118	118	230	230	0.56	404
Crane boy.....	202	1.00	1	2	2	2	2	0.01	207
Crane men.....	202	1.74	3	317	109	570	190	1.62	353
Cutters.....	202	2.80	1	2	2	5	5	0.01	805
	202	2.75	1	131	131	300	300	0.65	563
	202	2.04	1	118	118	247	247	0.56	804
	202	3.16	3	361	120	1,142	381	1.79	639
	202	3.03	1	115	115	418	418	0.57	724
Total.....	202	3.12	7	727	104	2,372	325	8.60	681
Door boys.....	202	.75	23	1,342	58	1,015	44	0.64	153
	202	.68	1	108	108	66	66	0.53	178
Total.....	202	.70	24	1,450	60	1,110	46	7.17	153
Door boy and table boy.....	202	.90	1	111	111	100	100	0.55	183
Door boy and transmitter.....	202	1.20	1	120	120	152	152	0.59	256
Droppers.....	202	1.25	1	8	8	11	11	0.04	378
	202	1.00	1	13	13	21	21	0.06	326
Total.....	202	1.32	2	21	11	32	16	0.10	304
Engineers.....	202	1.70	1	37	37	62	62	0.18	320
	202	1.75	2	74	25	120	43	0.37	342
	202	1.80	1	27	27	48	48	0.13	330
	202	1.90	2	145	73	285	143	0.72	397
	202	2.00	1	6	6	12	12	0.03	404
7.....	202	1.85	8	208	26	534	67	1.48	571

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

L.—Steel Billets: UNITED STATES—Continued.

ESTABLISHMENT No. — —Continued.

[No statement of cost of production for steel billets is shown in Part I.]

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Engineers, locomotive	202	\$2. 15	16	1,841	115	\$3, 935	\$246	9. 11	\$432
Firemen	202	1. 50	2	4	2	6	3	0. 02	303
	202	2. 00	2	51	27	108	54	0. 27	404
	202	2. 10	5	873	175	1, 806	361	4. 23	417
Total	202	2. 06	9	933	104	1, 920	213	4. 62	416
Foreman, chippers	202	3. 69	1	187	187	727	727	0. 03	785
Foreman, laborers	202	3. 81	1	182	182	693	693	0. 90	769
Foremen, mill	202	5. 10	1	106	106	998	998	0. 97	1, 029
	202	5. 35½	1	106	196	1, 050	1, 050	0. 97	1, 082
Total	202	5. 22½	2	392	196	2, 048	1, 024	1. 94	1, 055
Forgers	202	2. 00	2	3	2	6	3	0. 01	404
Furnace helpers	202	2. 25	2	4	2	9	5	0. 02	455
Guides	202	1. 62	4	21	5	34	9	0. 10	327
	202	1. 82	3	28	9	51	17	0. 14	368
	202	1. 95½	2	47	24	92	45	0. 23	395
Total	202	1. 84½	9	96	11	177	20	0. 47	372
Guides and tongmen	202	2. 03	2	33	17	67	34	0. 16	410
Guide and transmitter	202	2. 04½	1	115	115	235	235	0. 57	413
Hammer drivers	202	2. 63½	4	253	63	667	167	1. 25	533
Heaters	202	2. 74	3	261	87	715	238	1. 29	553
	202	2. 98	16	1, 270	127	3, 784	378	6. 29	692
Total	202	2. 94	13	1, 531	118	4, 499	346	7. 58	594
Heaters' helpers	202	2. 01½	14	1, 372	98	2, 764	197	6. 79	407
	202	2. 15½	6	551	92	1, 188	198	2. 73	436
Total	202	2. 05½	20	1, 923	96	3, 952	198	9. 52	415
Heaters' helper and hooker...	202	2. 47½	1	99	99	245	245	0. 49	500
Heaters' helper and lighter-up.	202	1. 87½	1	57	57	107	107	0. 28	379
Heaters' helper and tongman.	202	2. 28	1	85	85	194	194	0. 42	461
Heaters' helpers and trans- mitters.	202	2. 00	1	2	2	4	4	0. 01	404
	202	2. 17½	1	120	120	261	261	0. 59	439
Total	202	2. 17	2	122	61	265	133	0. 69	439
Hookers	202	2. 31	3	130	43	300	100	0. 64	466
	202	2. 42	4	254	64	615	154	1. 26	489
	202	3. 05	4	357	89	1, 088	272	1. 77	616
Total	202	2. 70½	11	741	67	2, 003	182	3. 67	546
Hookers, tumble	202	3. 46½	5	430	86	1, 491	298	2. 13	700
Hooker and screwman	202	2. 27½	1	69	69	157	157	0. 34	490
Hookers and tongmen	202	2. 36	1	108	108	255	255	0. 53	477
	202	2. 69½	1	92	92	248	248	0. 46	545
Total	202	2. 51½	2	200	100	503	252	0. 99	508
Inspectors	202	2. 10	1	11	11	23	23	0. 05	422
	202	2. 70	1	7	7	19	19	0. 03	548
Total	202	2. 83½	2	18	9	42	21	0. 06	471

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

L.—Steel Billets: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ployee.
				Total.	Aver- age.	Total.	Aver- age.	
Charger and chipper.....	202	\$1.78	8	13	13	\$22	\$32	0.06
Charger and furnace helper.....	202	2.50	1	2	2	5	5	0.01
Charger and guide.....	202	2.00	1	4	4	8	8	0.02
Chargers and heaters' helpers.....	202	2.13	4	364	91	776	195	1.80
Charger and hooker.....	202	2.70	1	128	128	241	341	0.62
Charger and laborer.....	202	1.56	1	32	32	50	50	0.16
Chargers and sweepers.....	202	1.66	3	6	2	10	5	0.03
Chargers and tongmen.....	202	2.10	2	47	24	98	50	0.23
Charger and transmitter.....	202	2.11	1	120	120	253	253	0.59
Chippers.....	202	1.25	1	12	12	16	16	0.06
	202	1.60	2	27	19	30	30	0.18
	202	2.00	3	292	97	584	195	1.45
	202	2.50	1	4	4	10	10	0.02
Total.....	202	1.84	7	345	49	669	96	1.71
Chipper and masons' helper.....	202	1.85	1	156	156	292	292	0.78
Cleaner, office.....	202	1.00	1	30	30	30	30	0.15
Conductors.....	202	1.50	9	600	67	100	100	2.97
Conductor and fireman.....	202	1.73	1	15	15	26	26	0.07
Conductor and oiler.....	202	1.38	1	33	32	46	46	0.16
Conductor and transmitter.....	202	1.37	1	146	146	230	230	0.72
Cradlemen.....	202	1.92	1	124	124	238	238	0.61
	202	2.50	1	4	4	10	10	0.02
Total.....	202	1.92	2	128	64	248	124	0.63
Cradlemen and tablemen.....	202	1.49	1	71	71	106	106	0.35
	202	1.78	1	131	131	233	233	0.65
Total.....	202	1.68	2	202	101	339	170	1.00
Cradleman and transmitter.....	202	2.00	1	118	118	236	236	0.58
Crane boy.....	202	1.00	1	2	2	2	2	0.01
Cranemen.....	202	1.74	3	327	109	570	190	1.62
Cutters.....	202	2.50	1	2	2	5	5	0.01
	202	2.75	1	131	131	260	260	0.65
	202	2.94	1	118	118	247	247	0.58
	202	3.16	3	361	120	1,142	381	1.79
	202	3.63	1	115	115	418	418	0.37
Total.....	202	3.12	7	727	104	2,272	325	1.80
Door boys.....	202	.75	23	1,342	58	1,015	44	0.64
	202	.88	1	108	108	96	96	0.52
Total.....	202	.76	24	1,450	60	1,110	46	1.17
Door boy and table boy.....	202	.90	1	111	111	100	100	0.55
Door boy and transmitter.....	202	1.26	1	120	120	132	132	0.59
Dropmen.....	202	1.25	1	8	8	11	11	0.04
	202	1.60	1	13	13	21	21	0.06
Total.....	202	1.52	2	21	11	32	16	0.10
Engineers'.....	202	1.70	1	37	37	62	62	0.18
	202	1.75	3	74	25	129	43	0.37
	202	1.80	3	27	27	48	48	0.13
	202	1.96	2	143	73	285	143	0.72
	202	2.00	1	6	6	12	12	0.02
Total.....	202	1.85	8	238	36	536	67	1.43

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

L.—Steel Billets: UNITED STATES—Continued.

ESTABLISHMENT No. — —Continued.

[No statement of cost of production for steel billets is shown in Part I.]

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Diff. from employ-ees.	Days of work done.		Earnings.		Necessary em-ployees.	Conse-quent average earnings per em-ployee.
				Total.	Average.	Total.	Average.		
Engineers, locomotive	202	\$2.15	16	1,841	115	\$3,935	\$216	2.11	\$432
Firesmen	202	1.50	2	4	2	6	3	0.02	303
	202	2.00	2	51	37	108	54	0.27	404
	202	2.10	5	673	175	1,806	361	4.33	617
Total	202	2.06	9	933	194	1,920	213	4.08	416
Foreman, chippers	202	3.60	1	187	187	727	727	0.03	785
Foreman, laborers	202	3.61	1	182	183	693	693	0.80	799
Foremen, mill	202	5.10	1	106	106	598	598	0.97	1,029
	202	5.33	1	106	106	1,030	1,030	0.07	1,063
Total	202	5.22	2	302	196	2,648	1,024	1.94	1,053
Forgers	202	2.06	2	3	2	6	3	0.01	404
Furnace helpers	202	2.25	3	4	2	9	5	0.03	456
Guides	202	1.62	4	21	5	24	9	0.16	377
	202	1.82	3	28	9	51	17	0.14	368
	202	1.83	3	47	24	92	45	0.23	395
Total	202	1.84	9	96	11	177	30	0.47	372
Guides and tongemen	202	2.03	2	33	17	67	34	0.16	416
Guide and transmitter	202	2.04	1	113	115	225	225	0.67	419
Hammer drivers	202	2.63	4	252	63	667	167	1.25	533
Heaters	202	2.74	3	261	67	715	238	1.23	553
	202	2.98	10	1,270	127	2,784	378	4.29	692
Total	202	2.94	13	1,631	118	4,499	348	7.58	594
Heaters' helpers	202	2.01	14	1,372	98	2,764	197	6.79	607
	202	2.15	6	551	93	1,168	193	1.73	436
Total	202	2.05	20	1,923	96	3,932	190	8.52	416
Heaters' helper and hooker	202	2.47	1	80	69	245	245	0.43	500
Heaters' helper and lighter-up	202	1.67	1	57	57	107	107	0.23	379
Heaters' helper and tongemen	202	2.28	1	85	85	194	194	0.45	461
Heaters' helpers and trans- mitters	202	2.00	1	2	2	4	4	0.01	404
	202	2.17	1	120	120	261	261	0.60	429
Total	202	2.17	2	122	61	265	133	0.60	429
Hookers	202	2.31	3	130	43	306	100	0.64	466
	202	2.43	4	154	64	615	154	1.28	489
	202	3.05	4	357	89	1,088	273	1.77	616
Total	202	2.70	11	741	67	2,003	182	3.67	546
Hookers, tumble	202	2.46	5	430	86	1,491	296	2.13	700
Hooker and screwman	202	2.27	1	60	60	157	157	0.34	480
Hookers and tongemen	202	2.36	1	108	108	255	255	0.53	477
	202	2.60	1	93	93	248	248	2.40	645
Total	202	2.51	2	200	100	508	283	0.80	509
Inspectors	202	2.10	1	11	11	23	23	0.05	422
	202	2.70	1	7	7	19	19	0.03	548
Total	202	2.33	2	18	9	42	21	0.06	471

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

L.—Steel Billets: UNITED STATES—Continued.

ESTABLISHMENT No. — —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.
				Total.	Aver- age.	Total.	Aver- age.	
Inspector and stamper.....	202	\$1.08½	1	54	54	\$106	\$106	0.27
Inspector and weighman.....	202	1.03½	1	142	142	275	275	0.70
Janitor.....	235	.48	1	244	244	120½	120	1.04
Laborers.....	202	1.25	44	2,742	62	3,444	78	13.57
Levermen.....	202	2.21	3	323	108	714	236	1.60
	202	2.51½	2	140	70	353	176	0.69
Total.....	202	2.80	5	463	93	1,046	215	2.28
Lighter-up.....	202	1.06	1	98	98	92	92	0.44
Machinists.....	202	2.06	1	200	200	400	400	0.98
	202	2.23	1	205	205	481	481	1.01
	202	2.50	1	224	224	556	556	1.11
Total.....	202	2.26	3	629	210	1,436	473	3.11
Mail boys.....	202	.43	2	217	109	88	47	1.07
Masons.....	202	3.25	3	228	76	739	246	1.13
	202	4.00	1	190	190	756	756	0.94
Total.....	202	3.68½	4	418	108	1,496	375	2.67
Masons' helpers.....	202	1.50	10	928	33	493	49	1.62
Others.....	202	1.85	1	156	156	213	213	0.78
	202	1.50	1	172	172	257	257	0.85
Total.....	202	1.42½	2	330	165	470	225	1.63
Painter.....	202	2.33½	1	3	3	7	7	0.01
Pipe fitters.....	202	1.50	3	307	154	481	231	1.52
	202	2.27½	1	213	213	506	506	1.05
Total.....	202	1.86	3	520	173	987	372	2.57
Riggers.....	202	1.50	2	193	97	280	145	0.96
Screwmen.....	202	2.45	5	1,110	222	2,746	549	5.50
Stamper.....	202	2.29	3	356	119	830	283	1.76
Storekeeper.....	202	1.80	1	105	105	180	180	0.92
Storekeeper's helper.....	202	1.40	1	73	73	102	102	0.36
Sweepers.....	202	1.46½	6	124	22	196	33	0.66
Table boys.....	202	1.25	1	38	38	47	47	0.19
	202	1.47	3	176	59	250	83	0.87
Total.....	202	1.39	4	214	54	297	74	1.06
Tablemen.....	202	1.95	3	144	49	265	95	0.72
Tableman and transmitter.....	202	1.63	1	58	58	161	161	0.44
Tongamen.....	202	2.32½	6	381	64	885	148	1.69
	202	2.51½	2	31	16	78	39	0.13
Total.....	202	2.34½	8	412	52	963	120	2.04
Tongamen and transmitters.....	202	2.25½	2	160	80	361	181	0.79
Transferman.....	202	1.65	1	23	23	37	37	0.11
Transmitters, car.....	202	1.75	1	23	23	39	39	0.11
	202	2.13	4	129	32	275	69	0.64
	202	2.77½	3	339	113	755	252	1.68
	202	2.42½	1	31	31	75	75	0.15
Total.....	202	2.15	9	522	88	1,164	177	2.58

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

L.—Steel Billets: UNITED STATES—Concluded.

ESTABLISHMENT No. — —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Transmitters, hook.....	202	\$2.38½	4	221	55	\$527	\$132	1.00	\$182
	202	2.57½	1	110	110	284	284	0.54	522
	202	3.50	1	4	4	14	14	0.02	707
Total	202	2.40½	6	335	56	825	138	1.63	497
Transmitters, hydraulic.....	202	1.08	2	148	74	286	143	0.73	390
Watchmen	235	1.46	4	846	212	1,235	309	2.00	343
	235	2.95	1	206	206	608	608	0.88	694
Total	235	1.75	5	1,052	210	1,843	369	4.43	412
Water carrier	202	1.38	1	130	130	177	177	0.64	275
Water tenders.....	202	1.50	2	225	113	338	169	1.11	303
Weighmaster.....	202	2.30	1	201	201	456	456	1.00	458
Weighmen	202	1.80	2	83	42	149	75	0.41	363
The establishment .....	.....	2.06	399	29,264	73	60,284	151	143.87	419

MI.—Steel Blooms: UNITED STATES.

ESTABLISHMENT No.—.

[No statement of cost of production for steel blooms is shown in Part I.]

Ashmen	132	\$1.50	1	14	14	\$21	\$21	0.11	\$128
	132	1.60	3	156	52	255	85	1.18	216
	132	1.75	3	268	89	456	152	2.03	225
Total	132	1.67	7	438	63	732	105	3.32	281
Brakemen	182	1.60	3	210	70	341	114	1.50	214
	182	1.85	1	119	119	220	220	0.90	244
Total	182	1.70½	4	320	82	561	140	2.49	225
Brakeman, locomotive.....	132	1.65	1	123	123	202	202	0.93	217
Carpenters	144	2.00	2	22	11	45	23	0.15	295
	144	2.15	1	78	78	167	167	0.54	308
Total	144	2.12	3	100	83	212	71	0.69	303
Chargers and drawers.....	132	2.62½	5	139	28	366	73	1.05	347
	182	2.77½	6	634	106	1,759	293	4.80	366
	182	3.00	1	17	17	51	51	0.13	366
	182	3.25	1	4	4	13	13	0.03	429
Total	182	2.75½	13	794	61	2,188	108	6.01	364
Charger and scrap wheeler...	132	2.56½	1	23	23	59	59	0.17	339
Cinder wheeler	132	1.60	1	120	120	191	191	0.91	210
Coal dumper.....	144	1.50	1	166	166	254	254	1.15	220
Crane boys	132	1.00	1	1	1	1	1	0.01	133
	182	1.83½	1	96	96	176	176	0.73	242
	132	2.00	2	113	57	226	113	0.86	264
Total	132	1.92	4	210	53	403	101	1.60	253
Craue boy and door boy	132	1.13½	1	75	75	85	85	0.57	150
Door boys	132	.85	7	263	83	329	47	2.02	113

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

NL.—Steel Blooms: UNITED STATES—Continued.

ESTABLISHMENT No. —Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Disc. percent.	Days of work done.		Earnings.	Keenest average employe.	Consequent average earnings per employe.
				Total.	Average.	Total.	Average.	
Draw boy and laborer.....	144	\$1.00	1	7	7	\$7	\$7	0.03
Drawer and heaters' helper.....	132	2.00	1	30	30	270	270	0.70
Engineer.....	132	3.20	1	128	128	410	410	0.97
Engineers, locomotive.....	132	1.00	1	93	93	152	152	0.70
	132	1.83	2	267	131	484	242	1.80
Total.....	132	1.79	3	253	119	636	212	2.60
Fireman.....	132	1.83	1	114	114	210	210	0.86
Fireman, laborer.....	144	1.05	1	140	140	200	200	1.01
Foreman, coal breakers.....	144	2.25	1	143	143	323	322	0.90
Grossers.....	132	1.60	2	303	152	552	276	2.30
Heaters.....	132	4.12	1	8	8	33	33	0.06
	132	5.23	4	434	109	2,373	593	3.30
Total.....	132	5.21	5	442	68	2,308	461	3.25
Heaters' helpers.....	132	3.14	2	101	51	317	169	0.77
	132	3.37	3	200	103	1,038	346	0.77
Total.....	132	3.31	5	400	62	1,855	271	3.10
Laborers.....	144	1.40	30	1,240	41	1,747	48	2.61
	144	1.50	7	606	63	696	142	4.03
	144	1.53	1	139	139	214	214	0.97
	144	1.60	12	751	63	1,200	100	5.22
	144	1.03	5	332	116	660	192	4.64
	144	1.70	3	212	106	350	178	1.47
	144	1.75	3	233	58	409	136	1.62
Total.....	144	1.54	60	3,423	64	5,892	98	28.56
Laborers, railroad.....	144	1.40	7	597	85	835	119	4.15
Laborer and scrap wheeler.....	144	1.68	1	51	51	80	50	0.36
Mechanists.....	144	1.82	1	161	161	294	294	1.12
	144	2.10	1	201	201	422	422	1.40
	144	2.50	1	2	2	5	5	0.01
	144	2.73	1	179	179	497	493	1.24
	144	2.20	1	116	116	270	270	0.81
Total.....	144	2.46	5	650	133	1,584	317	4.58
Mechanists' helpers.....	144	1.73	1	119	119	207	207	0.83
	144	1.99	1	168	168	320	320	1.17
Total.....	144	1.83	2	287	144	627	264	2.00
Misers and misers' helpers.....	132	1.00	1	133	133	212	212	1.01
	132	1.94	1	130	130	213	210	0.98
	132	1.90	3	407	136	770	270	3.03
Total.....	132	1.83	5	670	134	1,228	246	5.07
Plumber.....	144	2.00	1	147	147	294	294	1.02
Plumber's helper.....	144	1.50	1	167	167	252	252	1.10
Roll bands.....	132	2.94	0	376	89	1,573	263	4.06
Roll band and roller.....	132	2.97	3	127	127	503	503	0.66
Rollers.....	132	2.12	2	300	100	1,026	318	1.52
Scrap wheelers.....	132	1.50	1	4	4	6	6	0.02
	132	2.20	2	109	63	240	120	0.63
	132	2.50	1	2	2	5	5	0.02
	132	2.00	1	2	2	6	6	0.02
Total.....	132	2.10	5	117	23	257	61	0.66

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

M.—Steel Blooms: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.
				Total.	Aver- age.	Total.	Aver- age.	
Serp wheelers and shear-men's helpers.	132 122	\$3.38 2.57	1 1	184 7	184 7	\$349 18	\$349 18	0.78 0.05
Total	132	2.40	2	111	56	287	134	0.84
Scull breakers	144	1.50	5	551	110	828	128	1.53
Shear-men	132	3.89	2	217	109	845	423	1.54
Shear-men's helpers	132	2.82	8	510	76	1,000	200	4.62
	132	2.71	3	323	74	904	321	1.98
Total	132	2.64	11	833	76	2,204	200	6.31
Steel loaders	132	1.90	11	747	68	1,417	120	5.06
Stopper-maker	132	2.09	1	123	123	257	257	0.93
Water tenders	132	2.40	3	329	109	786	262	2.48
The establishment		2.12	125	15,194	73	32,225	143	110.79

ESTABLISHMENT No. —.

[No statement of cost of production for steel blooms is shown in Part I.]

Askman	230	\$1.00	1	10	10	916	916	0.04	9308
Askman (with teams)	251	2.11	2	429	215	905	453	1.71	809
Blacksmiths	230	2.89	1	315	315	496	496	0.02	531
	230	2.59	3	9	5	23	12	0.04	538
	230	2.00	1	209	209	608	608	0.21	609
	230	2.15	1	221	221	600	600	0.06	724
Total	230	2.78	5	854	121	1,629	366	2.54	641
Blacksmiths' helpers	230	1.85	4	574	144	1,062	296	2.59	430
Brakemen	230	1.05	7	421	60	452	36	1.32	366
	230	1.00	3	363	117	563	169	1.68	366
Total	230	1.87	10	778	77	1,215	123	3.56	362
Bricklayers	251	2.50	1	159	152	389	393	0.61	631
Bricklayers and laborers	251	1.58	1	210	210	322	322	0.04	390
	251	2.06	1	33	33	85	85	0.13	600
Total	251	1.73	2	243	122	421	211	0.97	435
Carpenters	251	2.40	11	831	81	2,210	261	3.67	602
Chargers	230	3.41	1	197	197	672	672	0.36	735
	230	3.80	5	753	151	2,867	572	3.27	874
	230	4.02	2	109	100	800	400	0.67	925
Total	230	3.77	8	1,140	144	4,344	542	5.00	893
Charger and doorman	230	3.00	1	10	10	36	36	0.04	325
Charger and loader	230	2.18	1	124	124	271	271	0.54	503
Chargers' helpers	230	1.00	1	11	11	11	11	0.05	230
	230	1.50	3	143	73	213	107	0.69	330
Total	230	1.43	3	166	82	224	75	0.69	330

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

M.—Steel Blooms: UNITED STATES—Continued.

ESTABLISHMENT No. —. —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Doorman and hooker-up	230	\$2.92	1	110	110	\$321	\$321	0.48	\$671
Doormen and laborers	251	1.76½	4	116	29	205	51	0.46	444
	251	1.89	1	60	60	114	114	0.24	477
Total	251	1.81½	5	176	35	319	64	0.70	455
Doorman and telegraphman ..	230	2.45	1	80	80	276	276	0.35	784
Drawers	230	2.63	4	730	183	2,649	662	2.17	835
	230	4.00	3	539	180	2,155	718	2.34	920
Total	230	2.78½	7	1,269	181	4,804	686	5.51	871
Engineers	230	1.65	1	23	23	38	38	0.10	290
	230	1.85	1	13	13	24	24	0.06	425
	230	3.00	5	879	176	2,624	525	3.82	687
Total	230	2.93½	7	915	131	2,666	384	3.98	675
Engineer, drop	230	1.69	1	186	186	297	297	0.81	267
Engineers, locomotive	230	1.90	3	412	137	779	260	1.79	435
	230	2.25	1	202	202	468	468	0.88	533
	230	2.39	1	171	171	409	409	0.74	550
Total	230	2.11	5	785	157	1,656	331	3.41	485
Engineer and machinist	230	2.89	1	288	288	833	833	1.25	665
Firemen	230	1.65	1	91	91	149	149	0.40	377
	230	1.86	26	1,203	46	2,225	86	2.23	425
Total	230	1.83½	27	1,294	48	2,574	88	5.63	422
Fireman and firemen's helper.	230	1.64	1	117	117	192	192	0.51	377
Firemen and laborers	230	1.72	11	677	62	1,163	106	2.94	395
Firemen's helpers	230	1.55	4	154	39	238	60	0.67	335
Foremen, drop	230	1.80	2	191	96	340	170	0.83	409
Foreman, drop, assistant	230	1.60	1	180	180	284	284	0.78	363
Foreman, laborers	251	2.65	1	308	308	815	815	1.23	664
Foreman, laborers, assistant ..	251	1.55	1	146	146	228	228	0.58	391
Foreman, track	251	1.55	1	96	96	147	147	0.38	284
Gasman	230	2.00	1	14	14	28	28	0.06	160
Gasman's helper	230	1.65	1	13	13	21	21	0.06	372
Heaters	230	7.21½	1	198	198	1,429	1,429	0.86	1,660
	230	7.66	1	169	169	1,295	1,295	0.73	1,763
Total	230	7.42	2	367	184	2,724	1,362	1.59	1,707
Heaters' helpers	230	4.34½	2	476	238	2,068	1,034	2.07	999
	230	4.60½	1	183	183	843	843	0.80	1,060
	230	4.86½	1	217	217	1,056	1,056	0.94	1,119
Total	230	4.53	4	876	219	3,967	902	3.81	1,043
Hookers-up	230	3.70	1	63	63	233	233	0.27	851
	230	4.01½	4	795	199	3,190	798	3.46	923
	230	4.25½	7	885	126	3,853	550	3.35	1,001
	230	4.49	1	187	187	840	840	0.81	1,033
	230	5.33½	1	3	3	16	16	0.01	1,227
Total	230	4.20½	14	1,933	138	8,132	581	2.40	908

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

III.—Steel Blooms: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ- ees.	Days of work done.		Earnings.		Necessary employ- ees.
				Total.	Average.	Total.	Average.	
Laborers.....	251	\$1.40	77	5,161	67	67,229	964	29.48
	251	1.50	18	1,113	86	1,640	127	4.43
	251	1.55	14	267	19	414	30	1.06
	251	1.60	7	531	79	874	125	2.20
Total.....	251	1.43½	111	7,072	84	10,166	98	28.17
Laborers, boiler.....	230	1.45	3	80	27	110	36	0.35
	230	1.55	86	2,563	30	3,077	46	11.10
	230	1.65½	1	21	21	35	35	0.06
Total.....	230	1.55½	90	2,664	29	4,128	48	11.54
Laborers and metal breakers.....	251	1.58	2	211	70	333	111	0.84
Laborer and pressman.....	251	1.58½	1	170	170	190	190	0.48
Laborer and water tender.....	251	1.53½	1	48	48	89	89	0.19
Loaders.....	230	1.65	6	378	63	620	106	1.84
	230	1.80	1	67	67	125	125	0.29
	230	2.00	1	178	178	356	356	0.77
Total.....	230	1.78	8	623	78	1,110	139	2.70
Machinists.....	251	1.60	2	142	71	213	107	0.57
	251	1.75	1	255	255	439	439	1.72
	251	1.85	1	92	92	180	180	0.37
	251	2.15	3	408	135	870	290	1.62
	251	2.30	1	308	308	709	709	1.23
	251	2.33½	1	8	8	14	14	0.07
	251	2.48	1	165	165	396	396	0.06
	251	3.00	1	235	235	705	705	0.01
	251	3.45½	1	11	11	38	38	0.04
Total.....	251	2.10½	12	1,823	135	8,553	296	6.47
Machinists' apprentices.....	251	1.00	1	75	75	76	75	0.30
Machinists' helpers.....	251	1.06	1	13	12	12	12	0.05
	251	1.40	1	8	9	18	18	0.04
	251	1.50	1	10	10	15	15	0.04
	251	1.80	1	14	14	25	25	0.06
Total.....	251	1.44½	4	45	11	66	16	0.19
Master machinists.....	251	3.15	1	257	257	809	809	1.02
	251	3.84½	1	84	84	323	323	0.83
Total.....	251	3.32	2	341	171	1,132	506	1.35
Metal breakers.....	230	1.90	19	1,783	119	8,527	227	7.76
Metal worker.....	251	3.00	1	170	170	511	511	0.68
Metal worker and metal worker's helper.....	251	2.91	1	121	121	352	352	0.48
Metal worker's helpers.....	251	2.75	2	393	197	1,081	541	1.57
Others.....	230	1.65	8	765	96	1,347	156	3.33
Pressmen.....	251	1.65	1	25	25	41	41	0.10
	251	1.90	1	10	10	19	19	0.04
	251	3.15	1	351	351	1,167	1,107	1.40
Total.....	251	3.02½	3	386	129	1,167	329	1.84
Pressman's helpers.....	251	1.40	2	163	82	233	117	0.65
	251	1.61½	3	135	45	216	72	0.54
Total.....	251	1.51½	5	298	90	461	90	1.19

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

M.—Steel Blooms: UNITED STATES—Concluded.

ESTABLISHMENT No. — —Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different em-ploy-ees.	Days of work done.		Earnings.		Necessary em-ploy-ees.
				Total.	Average.	Total.	Average.	
Pump reversers.....	230	\$1.86	2	474	237	\$777	\$388	2.06
Repairer, cynola.....	230	2.60	1	204	204	510	510	0.39
Rollers.....	230	7.16½	1	217	217	1,556	1,555	0.94
	230	7.67	1	202	202	1,549	1,549	0.83
Total.....	230	7.41	2	419	210	3,104	1,562	1.82
Shearmen.....	230	5.39	1	195	195	1,051	1,051	0.85
	230	5.72½	1	189	189	1,082	1,082	0.82
Total.....	230	5.56½	2	384	192	2,133	1,087	1.87
Shearmen's helpers.....	230	1.48	2	221	111	769	385	0.96
	230	2.62	4	761	190	2,754	689	3.31
	230	3.28	2	352	176	1,368	683	1.53
	230	4.36½	2	193	97	842	421	0.84
Total.....	230	2.75	10	1,527	153	5,730	573	4.04
Telegraphmen.....	330	2.65½	2	178	89	651	326	0.77
Watchmen.....	292	1.55	2	292	146	458	227	1.00
	292	1.85	1	242	242	391	391	0.83
Total.....	292	1.58	2	534	178	846	281	1.83
Water boys.....	230	.80	3	20	7	12	4	0.09
Water tenders.....	230	2.14½	1	131	131	281	281	0.67
	230	2.25	2	367	182	621	274	1.60
Total.....	230	2.21½	4	498	125	1,104	278	2.17
Weighmen.....	230	1.50	1	4	4	6	6	0.02
	230	1.70	2	406	203	683	342	1.74
	230	1.85	3	41	14	76	25	0.19
Total.....	230	1.72	6	445	74	765	128	1.94
Yardman.....	251	2.25	1	263	263	596	596	1.05
The establishment.....		2.43	452	37,043	82	89,244	109	153.63

N.—Steel Rails: CONTINENT OF EUROPE.

ESTABLISHMENT No. —

(No statement of cost of production for this establishment is shown in Table VI.)

Bar handlers.....	77	80.69½	4	215	54	\$147	\$37	2.79	\$59
Catcher.....	77	.41½	1	2	2	.00	.00	0.94	32
Chargers.....	77	.72½	2	127	62	89	45	1.60	56
Engineers, hammer.....	77	1.84½	3	196	65	364	121	2.55	143
Foremen, rollers.....	77	1.81½	3	200	77	417	139	2.99	140
Hammermen.....	77	.97	2	129	65	125	63	1.68	75
	77	1.22	1	68	68	63	63	0.88	94
Total.....	77	1.03½	2	197	66	208	69	2.56	81
Heaters.....	77	.93	2	207	61	102	64	2.89	71
	77	1.26½	3	104	65	243	82	2.52	97
Total.....	77	1.00	6	401	67	437	73	5.21	24

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.
N.—Steel Rails: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. — —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployee.
				Total.	Aver- age.	Total.	Aver- age.		
Heaters' helpers.....	77	\$0.74½	4	244	61	\$182	\$46	3.17	\$57
Hookers-up	77	.86	5	334	67	287	57	4.34	66
Hot-bed hands.....	77	.84	2	124	62	104	52	1.61	65
Machinists	77	.67	5	307	61	206	41	3.99	62
Rollers	77	.93	3	201	67	187	62	2.61	72
	77	1.32½	2	141	71	187	94	1.83	102
	77	1.53½	1	69	69	95	95	0.78	122
	77	1.85	1	78	73	135	135	0.95	142
Total	77	1.27	7	475	68	604	86	6.17	98
Rollers, chief	77	1.52	1	69	69	105	105	0.90	117
	77	2.67	2	137	69	366	183	1.78	206
Total	77	2.23½	3	206	69	471	157	2.68	176
Rollers' helpers	77	.74	3	190	63	141	47	2.47	57
Sawyer	77	.85	1	67	67	57	57	0.87	68
Shearman.....	77	.66½	1	55	55	37	37	0.71	52
Weighmen.....	77	.76	2	151	76	115	58	1.96	69
The establishment.....	.....	1.08½	55	3,587	65	3,806	71	46.61	84

ESTABLISHMENT No. —

[No statement of cost of production for this establishment is shown in Table VI.]

Blacksmiths.....	78	\$0.83½	2	134	67	\$112	\$56	1.72	\$65
Blacksmiths' helpers	78	.47	4	231	58	108	27	2.96	36
Borers.....	78	.49½	8	545	68	270	34	6.99	39
Carriers	78	.42½	18	1,190	66	539	33	15.28	39
Catchers.....	78	1.71	2	144	72	246	123	1.85	133
Catchers' helper	78	1.49	1	61	61	91	91	0.78	116
Cleaners.....	78	.46	2	163	82	75	38	2.09	36
Clippers	78	.53	8	526	66	263	33	6.74	39
Cold-bed hands.....	78	.56	10	561	56	313	31	7.19	44
Door boys	78	.19½	10	440	44	85	9	5.64	16
Dressers.....	78	.67½	8	590	74	399	50	7.56	53
Dressers' helpers	78	.33	8	506	63	166	21	6.49	26
	78	.45	1	72	72	32	32	0.92	35
Total	78	.34½	9	578	64	196	22	7.41	27
Drillers	78	.57	2	133	67	76	38	1.71	45
Drillsmith	78	.54½	1	46	46	25	25	0.69	42
Elevator tenders.....	78	.69	4	375	69	190	48	3.53	54
Filers.....	78	.51	32	1,990	62	1,014	32	25.51	40
Foremen, heaters	78	1.64	1	73	73	128	128	1.00	123
	78	1.83½	1	80	80	147	147	1.03	143
Total	78	1.74	2	158	79	275	138	2.03	136
Foremen, laborers	78	.50½	2	114	57	68	34	1.46	47
Foreman, mill	78	3.22½	1	74	74	237	237	0.96	239
Foreman, rollers.....	78	3.37½	1	60	60	203	203	0.77	264
Heaters.....	78	1.56	10	559	56	873	87	7.17	122
Heaters' helpers.....	78	.81½	25	1,590	45	1,296	37	20.38	64
	78	.93½	3	121	40	113	38	1.55	73
Total	78	.82½	28	1,711	45	1,409	37	21.93	64

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

N.—Steel Rails: CONTINENT OF EUROPE—Concluded.

ESTABLISHMENT No. —. —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dis- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Hookers-up.....	78	\$0.62½	1	8	8	\$5	\$5	0.10	\$49
	78	.68½	2	16	8	11	6	0.21	54
	78	.75	2	16	8	12	6	0.21	50
	78	.70½	12	748	62	573	48	9.50	60
	78	.87½	1	8	8	7	7	0.10	68
	78	.90½	26	1,521	59	1,376	53	19.50	71
Total.....	78	.85½	44	2,317	53	1,984	45	29.71	67
Hot-bed hands.....	78	.57½	16	1,020	64	586	37	13.08	45
Ingot chargers.....	78	.56½	8	475	59	260	34	6.09	44
Ingot wheelers.....	78	.67½	14	789	56	532	38	10.12	53
Ingot wheelers' helpers.....	78	.56	7	352	50	197	28	4.51	44
Inspectors.....	78	.47½	1	63	63	30	30	0.81	37
	78	.53	1	61	61	32	32	0.78	41
	78	.58	1	73	73	42	42	0.94	45
Total.....	78	.53	3	197	66	104	35	2.53	41
Laborers.....	78	.53	25	818	13	168	7	4.08	41
Machinists.....	78	.49	1	82	82	40	40	1.05	38
	78	.52	4	255	64	133	33	3.27	41
	78	.53	1	82	82	43	43	1.05	41
	78	.58	2	104	52	60	30	1.33	45
	78	.62½	2	154	77	97	49	1.97	49
Total.....	78	.55	10	677	68	373	37	8.67	43
Numberers.....	78	.41	1	73	73	30	30	0.94	32
	78	.48½	1	66	66	32	32	0.85	38
Total.....	78	.44½	2	139	70	62	31	1.79	35
Overseers.....	78	.79	1	85	85	67	67	1.09	61
	78	1.06½	3	212	71	226	75	2.72	83
	78	1.20	1	80	80	96	96	1.03	94
	78	1.45	1	40	40	58	58	0.51	118
Total.....	78	1.07	6	417	70	447	75	5.35	84
Press hands.....	78	.51½	16	1,021	64	528	33	13.09	40
Rail handlers.....	78	.01½	25	1,286	51	789	32	16.48	48
Rollers.....	78	2.06	3	198	66	406	135	2.54	160
Rollers' helpers.....	78	1.37½	1	8	8	11	11	0.10	107
	78	1.44½	2	16	8	23	12	0.21	112
	78	1.65½	1	68	68	112	112	0.87	128
Total.....	78	1.58½	4	92	23	146	37	1.18	124
Roughers.....	78	1.25½	4	27	7	33	8	0.35	95
	78	1.37½	1	8	8	11	11	0.10	107
	78	1.46	4	135	34	197	49	1.73	114
	78	1.61½	5	320	64	516	103	4.10	128
Total.....	78	1.54½	14	490	35	757	54	6.28	121
Sawyers.....	78	.68½	4	268	67	184	46	3.44	54
Servants.....	78	.39	3	107	36	31	10	1.37	23
Straightener.....	78	.50	1	2	2	1	1	0.03	39
Supervisor.....	78	2.12½	1	46	46	97	97	0.59	164
Turbine men.....	78	.48½	2	136	68	66	33	1.74	38
	78	.77	3	194	66	152	51	2.54	60
	78	.93½	1	76	76	71	71	0.97	73
Total.....	78	.70½	6	410	18	289	48	5.25	55
Water boy.....	78	.38½	1	73	73	28	28	0.94	30
The establishment.....		.72	382	29,977	51	15,007	39	262.96	56

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES.

ESTABLISHMENT No. —.

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Blacksmiths.....	313	\$1.50	1	149	149	\$222	\$222	0.48	\$466
	313	2.25	2	315	158	684	342	1.01	680
Total	313	1.95½	3	464	155	906	302	1.49	611
Blacksmiths' helper and catcher.	312	1.37½	1	212	212	291	291	0.68	430
Carpenter	313	3.00	1	14	14	41	41	0.04	917
Catchers.....	313	1.60	8	206	26	332	42	0.65	507
	313	1.70	1	128	128	213	213	0.41	521
	313	1.80	1	147	147	265	265	0.47	564
	313	2.10	2	578	289	1,214	607	1.85	657
	313	2.15	2	261	131	562	281	0.83	674
	313	(a)	4	(a)	(a)	114	29	(a)	(a)
Total	313	(b)	18	(b)	(b)	2,700	150	(b)	(b)
Catchers and laborers	313	1.48	2	50	25	74	37	0.16	463
Catcher and puddlers' helper.	313	(a)	1	(a)	(a)	240	240	(a)	(a)
Catchers and roughers	313	1.84½	3	72	24	133	44	0.23	578
	313	(a)	1	(a)	(a)	337	337	(a)	(a)
Total	313	(b)	4	(b)	(b)	470	118	(b)	(b)
Coal wheeler	313	1.25	1	324	324	405	405	1.04	391
Engineers	313	2.00	1	343	343	687	687	1.10	677
	313	2.96	1	365	365	1,080	1,080	1.17	926
Total	313	2.49½	2	708	354	1,767	884	2.27	781
Engineer and laborer.....	313	1.62½	1	123	122	198	198	0.39	508
Firemen.....	313	1.25	1	335	335	419	419	1.07	391
	313	1.35	1	314	314	431	431	1.00	430
	313	1.45	1	389	389	564	564	1.24	454
	313	1.50	1	343	343	514	514	1.10	469
Total	313	1.39½	4	1,381	345	1,928	482	4.41	437
Fireman and laborer.....	313	1.24½	1	220	220	274	274	0.70	390
Heaters	313	(a)	11	(a)	(a)	5,263	478	(a)	(a)
Heater and heaters' helper ...	313	(a)	1	(a)	(a)	42	42	(a)	(a)
Heater and hooker	313	(a)	1	(a)	(a)	284	284	(a)	(a)
Heater and laborer.....	313	(a)	1	(a)	(a)	143	143	(a)	(a)
Heater and roller.....	313	(a)	1	(a)	(a)	212	212	(a)	(a)
Heaters' helpers.....	313	(a)	5	(a)	(a)	559	112	(a)	(a)
Hookers	313	1.15	5	272	54	311	62	0.87	358
	313	1.20	2	245	123	294	147	0.78	376
	313	1.25	6	539	90	673	112	1.72	391
	313	1.30	2	204	102	265	133	0.65	407
	313	1.40	2	263	132	370	185	0.84	440
Total	313	1.25½	17	1,523	90	1,913	113	4.86	393
Hooker and laborer.....	313	1.57½	1	104	104	164	164	0.33	494
Hookers and puddlers' helpers	313	(a)	2	(a)	(a)	94	47	(a)	(a)
Hooker and rougher.....	313	1.50	1	2	2	3	3	0.01	470

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. — —Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.						Condition if workmen had continuous employment.	
			Diff. percent employment.	Days of work done.		Earnings.		Necessary employees.	Consequent average earnings per employee.	
				Total.	Average.	Total.	Average.			
Laborers	313	\$1.00	14	396	28	\$400	320	1.27	\$316	
	313	1.05	180	6,721	27	7,121	40	21.67	323	
	313	1.10	1	10	10	11	11	0.08	344	
	313	1.15	33	3,318	72	2,643	53	7.41	357	
	313	1.20	15	1,427	95	1,703	114	4.56	374	
	313	1.25	11	837	32	416	60	1.16	390	
	313	1.30	5	356	72	480	92	1.14	463	
	313	(a)	1	(a)	(a)	3	3	(a)	(a)	
Total	313	(b)	253	(b)	(b)	17,785	49	(b)	(b)	
Laborers and puddlers	313	(a)	2	(a)	(a)	50	20	(a)	(a)	
Laborers and puddlers' helpers	313	(a)	3	(a)	(a)	115	28	(a)	(a)	
Laborer and rougher	313	(a)	1	(a)	(a)	49	49	(a)	(a)	
Laborer and shearman	313	1.18	1	244	244	288	266	0.78	300	
Laborers and stockers	313	1.20	1	51	51	60	60	0.16	465	
	313	1.36	1	77	77	120	120	0.25	468	
Total	313	1.43	3	128	64	186	93	0.41	453	
Machinists	313	1.75	3	28	9	49	16	0.09	548	
	313	2.25	6	670	112	1,506	231	3.14	764	
Total	313	2.23	9	698	78	1,555	173	2.23	697	
Masons	313	2.45	1	313	313	1,080	1,080	1.00	1,080	
	313	3.75	1	8	8	30	30	0.03	1,174	
Total	313	2.46	2	321	161	1,110	555	1.03	1,083	
Puddlers	313	(a)	67	(a)	(a)	18,373	274	(a)	(a)	
Puddlers and puddlers' helpers	313	(a)	12	(a)	(a)	1,729	144	(a)	(a)	
Puddlers' helpers	313	(a)	123	(a)	(a)	9,744	70	(a)	(a)	
Puddlers' helper and rougher	313	(a)	1	(a)	(a)	32	32	(a)	(a)	
Roll turner	313	4.00	2	222	222	606	890	0.71	1,253	
Rollers	313	1.50	2	187	94	273	127	0.60	487	
	313	2.27	2	211	121	847	274	0.77	710	
	313	5.00	2	269	135	1,347	674	0.86	1,587	
	313	5.50	1	261	251	1,447	1,447	0.83	1,735	
	313	10.40	1	269	269	3,606	3,606	0.92	3,256	
Total	313	5.31	3	1,247	156	6,670	826	3.98	1,983	
Roughers	313	2.00	10	784	78	1,667	157	2.50	696	
	313	2.50	2	59	30	123	67	0.19	706	
	313	2.40	2	340	190	913	456	1.21	751	
	313	(a)	11	(a)	(a)	2,491	236	(a)	(a)	
Total	313	(b)	25	(b)	(b)	5,103	201	(b)	(b)	
Scrap piler	313	(a)	1	(a)	(a)	294	294	(a)	(a)	
Shearman	313	1.25	1	320	320	323	323	1.02	334	
	313	1.35	7	1,174	168	1,574	225	3.76	618	
	313	1.60	1	74	74	118	118	0.24	490	
	313	1.75	1	311	311	543	545	0.89	540	
Total	313	1.39	10	1,833	148	5,630	263	4.01	437	

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

c Contractor. Includes wages and profits.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.
O.—Mixed Iron and Steel: UNITED STATES—Continued.
ESTABLISHMENT No. —. —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Squeezer	313	\$1. 25	1	118	118	\$148	\$148	6. 38	\$398
Stokers	313	1. 15	1	299	299	341	341	0. 96	357
	313	1. 25	8	1, 300	163	1, 624	203	4. 15	391
	313	1. 60	1	318	318	514	514	1. 02	506
Total	313	1. 29½	10	1, 917	192	2, 479	248	6. 13	405
Straighteners.....	313	1. 20	2	380	190	456	228	1. 21	376
	313	1. 25	2	578	239	723	362	1. 85	392
Total	313	1. 23	4	958	240	1, 179	295	2. 06	383
Teamster	313	1. 25	1	313	313	391	391	1. 00	391
Unloader	313	(a)	1	(a)	(a)	998	998	(a)	(a)
Watchman	365	2. 50	1	335	335	838	838	0. 92	913
The establishment.....	.....	(b)	625	(b)	(b)	85, 571	137	(b)	(b)

ESTABLISHMENT No. —.

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Ashmen	313	\$1. 62	14	884	63	\$1, 430	\$102	2. 82	\$506
Blacksmiths	313	2. 00	2	209	105	417	209	0. 67	625
	313	2. 50	1	107	107	262	262	0. 34	768
	313	2. 75	1	282	282	775	775	0. 90	860
	313	4. 16½	1	281	281	1, 171	1, 171	0. 90	1, 304
Total	313	2. 98½	5	879	176	2, 625	525	2. 81	935
Blacksmiths' helpers	313	1. 60	1	263	263	440	440	0. 84	524
	313	1. 75	4	804	201	1, 386	347	2. 57	540
	313	1. 87½	1	252	252	472	472	0. 81	586
Total	313	1. 74	6	1, 319	220	2, 298	383	4. 22	545
Bloom tossers	286	1. 70	4	477	119	811	203	1. 67	486
Boilermakers.....	313	2. 13	1	256	256	543	543	0. 82	664
	313	2. 50	2	427	214	1, 048	524	1. 36	768
Total	313	2. 33	3	683	228	1, 591	530	2. 18	729
Boilermakers' helper	313	1. 00	1	228	228	228	228	0. 73	313
Carpenters	313	1. 75	1	96	96	169	169	0. 31	551
	313	2. 00	2	206	103	418	209	0. 66	635
	313	2. 40	1	10	10	24	24	0. 03	751
	313	2. 50	15	462	31	1, 151	77	1. 48	780
Total	313	2. 27½	19	774	41	1, 762	93	2. 48	713
Catchers.....	286	2. 00	1	10	10	19	19	0. 03	543
	286	5. 50	1	120	120	660	660	0. 42	1, 573
	286	7. 76	1	240	240	1, 862	1, 862	0. 84	2, 219
	286	(a)	2	(a)	(a)	1, 003	502	(a)	(a)
Total	286	(b)	5	(b)	(b)	3, 544	709	(b)	(b)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given
b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Difference between employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.	Consequent average earnings per employ-ee.
				Total.	Average.	Total.	Average.		
Catchers and shoarmen.....	286	(a)	4	(a)	(a)	\$3,344	\$530	(a)	(a)
Cindermen	286	\$1.50	1	10	10	15	15	0.03	\$429
	286	1.00	12	855	80	1,531	128	2.34	458
	286	2.25	2	488	244	1,075	538	1.71	620
	Total	286	1.80	15	1,453	97	2,621	175	5.08	618
Coal unloaders	312	(a)	(b)	(a)	(a)	2,166	(b)	(a)	(a)
Drag-outs	286	1.40	1	5	5	7	7	0.02	408
	286	1.50	2	328	164	485	243	1.15	422
	286	1.80	1	7	7	11	11	0.02	449
	286	2.12	4	477	119	1,012	253	1.67	607
	286	(a)	2	(a)	(a)	337	160	(a)	(a)
Total	286	(c)	10	(c)	(c)	1,852	185	(c)	(c)
Drawers	312	1.50	7	631	90	939	134	2.02	466
	312	1.00	2	615	205	986	329	1.96	502
	312	1.75	1	241	241	428	428	0.78	831
	312	1.80	2	228	164	615	308	1.05	687
	Total	312	1.63	13	1,617	140	2,068	228	5.81	611
Drawer and puddlers' helper	286	(a)	1	(a)	(a)	442	442	(a)	(a)
Engineers	312	2.50	5	1,043	200	2,607	521	3.33	783
	312	2.00	1	1	1	3	3	0.00	028
	Total	312	2.50	6	1,044	174	2,610	435	3.33	783
Engineers, locomotive	312	2.50	1	281	281	727	727	0.80	810
	312	2.75	1	109	109	298	298	0.35	856
	312	3.12	1	309	309	969	969	0.99	961
	312	2.25	1	141	141	458	458	0.45	1,017
	Total	312	2.92	4	840	210	2,451	613	2.69	913
Fillers	312	1.65	48	6,277	172	13,480	281	26.44	510
Fillers and laborers	312	1.54	2	392	196	608	302	1.25	484
Filler and masons' helper.....	312	1.40	1	28	28	41	41	0.09	468
Firemen, boiler.....	312	1.50	1	7	7	10	10	0.02	447
	312	1.00	2	12	6	19	10	0.04	496
	312	1.75	6	921	154	1,621	270	2.94	351
	312	1.00	20	1,840	92	3,449	172	5.28	587
	312	2.00	1	68	68	133	133	0.22	612
	Total	312	1.83	30	2,848	95	5,232	174	9.10	575
Firemen, locomotive.....	312	1.50	2	551	184	837	270	1.78	475
	312	1.75	1	18	18	30	30	0.06	522
	Total	312	1.52	4	569	142	867	217	1.82	477
Fireman and foreman	312	1.04	1	201	203	568	568	0.94	607
Foreman, boiler	312	2.00	2	448	224	892	446	1.43	623
Foreman, coke oven	312	2.75	1	209	209	797	797	0.90	866
Foreman, gas house	345	2.00	2	446	247	968	404	1.35	720
Foremen laborers.....	312	2.70	1	321	321	866	866	1.03	644
	312	2.50	1	312	312	874	874	1.00	877
Total	312	2.75	2	633	317	1,740	870	2.03	800

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employes not given.

c No total can be made for the reason shown in footnote a.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Different employ- ees.	Days of work done.		Earnings.		Necessary employ- ees.	Consequent average earnings per employ- ee.
				Total.	Average.	Total.	Average.		
Foreman, paddlers.....	286	\$4.00	1	286	286	\$1,170	\$1,170	1.00	\$1,170
Gatemen.....	313	1.40	4	1,150	290	1,235	409	3.70	442
Heaters.....	286	2.00	1	36	36	72	72	0.13	572
	286	3.64 ^a	1	96	96	309	309	0.34	1,099
	286	4.56	2	345	173	1,677	839	1.21	1,300
	286	(a)	16	(a)	(a)	11,030	689	(a)	(a)
Total.....	286	(b)	20	(b)	(b)	13,148	637	(b)	(b)
Heaters' helpers.....	286	(a)	5	(a)	(a)	1,708	341	(a)	(a)
Helpers.....	286	1.40	3	117	39	160	86	0.41	413
	286	1.50	12	920	77	1,412	115	2.23	439
	286	1.75	7	97	14	160	24	0.24	498
	286	1.80	6	658	109	1,740	290	3.35	619
	286	2.00	7	874	129	1,936	277	3.41	508
	286	2.25	1	29	29	64	64	0.10	631
Total.....	286	1.77 ¹	34	3,095	86	5,490	153	10.83	507
Helpers and laborers.....	313	1.70 ¹	2	143	71	343	121	0.45	533
Hookers-up.....	286	1.50	4	453	113	872	168	1.56	424
	286	1.80	3	239	113	540	183	1.19	403
	286	1.75	7	772	110	1,349	193	2.70	500
Total.....	286	1.64 ¹	14	1,504	113	2,570	184	5.47	470
Hooker-up and piler.....	313	1.65 ¹	1	9	9	14	14	0.03	487
Laborers.....	313	.80	2	6	3	3	3	0.02	157
	313	.60	2	7	2	4	1	0.02	179
	313	.75	6	24	4	18	3	0.08	225
	313	1.00	8	199	19	168	18	0.54	307
	313	1.40	243	13,473	56	18,954	78	42.04	440
	313	1.50	22	1,876	85	2,601	127	5.80	467
	313	1.60	6	183	30	383	61	0.61	494
	313	1.65	2	16	8	26	13	0.05	606
	313	1.75	2	12	7	22	11	0.04	630
	313	1.85	4	636	164	1,190	298	2.10	563
	313	(a)	1	(a)	(a)	153	153	(a)	(a)
Total.....	313	(b)	208	(b)	(b)	23,640	79	(b)	(b)
Laborer and mason.....	313	1.54	1	13	13	20	20	0.04	482
Laborer and piler.....	313	1.53 ¹	1	41	41	63	63	0.13	481
Laborers and rollers.....	313	2.00	1	3	3	4	4	0.01	620
	313	2.25	1	31	31	70	70	0.10	707
Total.....	313	2.24	2	33	17	74	37	0.11	703
Laborer and straightener.....	313	1.68	1	187	187	314	214	0.80	626
Machinists.....	313	1.40	2	6	3	7	4	0.02	438
	313	1.60	2	485	243	781	391	1.85	564
	313	1.75	2	643	214	1,129	376	2.05	650
	313	2.00	2	603	203	821	411	1.20	628
	313	2.25	2	311	156	717	359	0.88	723
	313	2.50	16	1,873	117	4,650	291	5.98	779
	313	2.75	1	281	281	771	771	0.90	829
Total.....	313	2.22	28	4,001	143	8,685	317	12.78	603

^a Paid by the quantity. The daily rate of pay and days of work done cannot be given.^b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

C.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. — —Continued.

Occupation.	Work ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Def- erent em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ployed.	Conse- quent average earnings per em- ployed.
				Total.	Aver- age.	Total.	Aver- age.		
Machinists' helpers.....	312	\$1.28	1	41	41	651	651	0.13	430
	312	1.40	9	131	15	185	21	0.42	442
	312	1.80	3	324	111	508	109	1.07	476
	312	1.75	1	83	95	159	159	0.50	324
Total	312	1.80	14	601	43	903	65	1.92	470
Masons	312	2.20	11	912	83	2,930	268	2.91	1,006
Masons' helpers	312	1.40	20	1,160	58	1,629	81	2.71	440
	312	1.50	1	319	319	477	477	1.02	468
Total	312	1.42	21	1,479	70	2,106	100	4.73	416
Pilers	312	1.40	11	927	84	1,320	159	2.96	416
	312	1.80	16	2,686	149	4,031	224	8.59	400
Total	312	1.48	29	3,615	123	5,351	183	11.55	463
Piler and pauncher	312	1.33	1	3	3	4	4	0.01	417
Poke line	280	2.25	2	245	123	561	270	0.86	543
Puddlers	280	(a)	17	(a)	(a)	19,839	1,173	(a)	(a)
Puddlers' helpers	280	(a)	27	(a)	(a)	11,413	423	(a)	(a)
Panachers	312	.75	16	540	34	437	25	1.74	233
	312	.87	1	89	89	78	78	0.28	274
	312	1.00	2	114	57	116	58	0.36	318
Total	312	.80	19	749	39	601	32	2.38	251
Roll turners	312	3.50	1	79	79	245	245	0.22	1,096
	312	7.00	1	307	307	2,149	1,149	0.98	2,191
Total	312	0.35	3	377	189	2,394	1,197	1.20	1,938
Roll turners' helpers	312	1.40	1	143	143	209	209	0.47	442
Rollers	286	8.54	1	206	206	1,141	1,141	0.72	1,584
	286	6.30	1	80	80	504	504	0.28	1,802
	286	6.06	1	73	73	508	508	0.26	1,990
	286	7.15	2	172	86	1,231	616	0.60	2,047
	286	7.72	1	234	234	1,808	1,808	0.82	2,240
	286	7.63	1	131	131	1,076	1,076	0.46	2,340
	286	8.44	1	114	114	962	962	0.43	2,413
Total	286	7.11	8	1,010	126	7,160	898	3.54	2,633
Rollers and crews	286	(a)	12	(a)	(a)	12,800	1,067	(a)	(a)
Rollers' helpers	286	2.50	2	260	130	650	325	0.21	715
Roughers down	286	3.37	2	260	130	929	465	0.31	1,072
	286	4.49	1	131	131	548	548	0.46	1,284
	286	4.79	1	114	114	543	543	0.43	1,367
Total	286	4.08	4	505	179	2,062	516	1.77	1,168
Roughers up	286	3.37	4	477	119	1,606	407	1.67	963
	286	3.64	1	129	7	437	437	0.42	1,043
	286	4.86	1	240	240	1,192	1,192	0.34	1,620
	286	(a)	1	(a)	(a)	86	86	(a)	(a)
Total	286	(b)	7	(b)	(b)	3,324	475	(b)	(b)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
 b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. — —Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employes.	Days of work done.		Earnings.		Necessary employes.
				Total.	Average.	Total.	Average.	
Benchmen's helpers	286	\$1.55	2	20	10	\$31	\$16	0.97
	286	1.75	4	107	27	185	46	0.97
	286	2.00	1	12	12	23	23	0.94
Total	286	1.72	7	139	20	239	24	0.68
Scrap unloaders	313	(a)	(b)	(a)	(a)	2,338	(b)	(a)
Scrapers	286	.75	2	212	106	161	81	0.74
	286	.87½	2	278	139	245	123	0.97
Total	286	.83	4	490	123	406	102	1.71
Shearmen	286	1.50	1	180	180	290	290	2.66
	286	1.60	15	1,833	122	2,911	194	6.41
	286	1.75	5	1,128	225	1,978	396	2.94
	286	2.00	8	723	241	1,430	477	2.53
	286	2.00½	1	221	221	1,740	1,740	0.77
Total	286	2.05	25	4,002	164	8,398	336	14.31
Shearmen and shearmen's helpers	286	(a)	(b)	(a)	(a)	■ ■ ■	(b)	■ ■ ■
Shearmen's helper	286	1.00	1	121	121	121	121	0.43
Shippers	313	1.40	1	64	64	78	78	0.17
	313	1.50	3	1,061	208	2,490	211	5.31
Total	313	1.40½	9	1,715	191	2,566	285	5.48
Shovelers	286	1.62½	2	8	4	13	7	0.02
	286	(a)	4	(a)	(a)	820	130	(a)
Total	286	(d)	6	(d)	(d)	583	89	(d)
Stableman	355	1.40	4	257	60	500	126	0.96
Straighteners	286	1.40	5	61	12	86	17	0.21
	286	1.50	5	66	14	105	21	0.24
	286	1.60	1	28	28	42	42	0.09
	286	1.75	16	1,454	61	2,509	157	5.06
Total	286	1.70½	27	1,609	60	2,742	102	5.62
Switchmen	313	2.50	4	383	96	933	228	1.22
	313	2.70	2	84	42	223	112	0.37
	313	2.85	9	239	112	967	322	1.08
Total	313	2.66	9	805	69	2,142	238	2.57
Teamsters (with teams)	313	2.00	2	444	222	1,314	657	1.43
Trackmen	313	1.40	4	679	170	953	238	2.17
	313	1.60	2	120	60	188	94	0.38
Total	313	1.43	6	799	183	1,141	190	2.55
Watchmen	313	1.60	1	33	33	53	53	0.11
	313	1.75	1	396	295	517	517	0.94
Total	313	1.73½	2	929	164	580	286	1.06
Water tenders	313	2.10	3	695	232	1,456	485	2.22
Watchmen	286	1.75	2	481	241	842	421	1.66
The establishment		(d)	(d)	(d)	(d)	218,589	(d)	(d)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employees not given.

c Contractor. Includes wages and profits.

d No total can be made for reasons shown in footnotes a and b.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.
O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition of period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Boiler tender	313	\$1.50	1	241	241	\$357	\$357	0.77	\$464
Catchers.....	286	1.00	1	5	5	8	8	0.02	458
	286	(a)	13	(a)	(a)	3,739	312	(a)	(a)
Total	286	(b)	13	(b)	(b)	3,747	288	(b)	(b)
Catcher and hooker-up.....	286	(a)	1	(a)	(a)	164	164	(a)	(a)
Catcher and sticker-in.....	286	(a)	1	(a)	(a)	309	309	(a)	(a)
Engineers	313	1.50	1	320	320	469	469	1.02	459
	313	2.00	1	318	318	620	620	1.02	610
Total	313	1.70½	2	638	319	1,089	545	2.04	534
Foreman.....	313	2.60	1	4	4	12	12	0.01	939
Heaters.....	286	(a)	7	(a)	(a)	2,878	411	(a)	(a)
Heater and rougher	286	(a)	1	(a)	(a)	35	35	(a)	(a)
Heaters' helpers.....	286	.75	1	68	68	52	52	0.24	319
	286	1.00	1	201	201	201	201	0.70	286
	286	(a)	7	(a)	(a)	1,444	206	(a)	(a)
Total	286	(b)	9	(b)	(b)	1,697	189	(b)	(b)
Hookers-up	286	(a)	2	(a)	(a)	294	147	(a)	(b)
Hooker-up and laborer.....	286	(a)	1	(a)	(a)	138	138	(a)	(a)
Hooker-up and rougher.....	286	(a)	1	(a)	(a)	172	172	(a)	(a)
Laborers.....	313	.75	11	690	63	526	48	2.20	239
	313	.82	1	262	262	212	212	0.84	253
	313	.90	42	4,295	102	3,866	92	13.72	282
	313	.95	25	3,424	137	3,260	130	10.94	296
	313	1.00	35	3,809	109	3,805	109	12.17	313
	313	1.10	2	231	116	249	125	0.74	337
	313	1.12	1	97	97	111	111	0.31	358
	313	1.20	1	240	240	283	283	0.77	369
Total	313	.94½	118	13,048	111	12,312	104	41.69	295
Puddlers	286	1.14	16	756	47	862	54	2.64	326
	286	1.36½	8	754	94	1,030	129	2.64	391
	286	1.62½	14	1,478	106	2,402	172	5.17	465
	286	1.86	13	1,836	141	3,417	263	6.42	532
	286	2.11½	26	4,294	165	9,089	350	15.01	605
	286	2.31½	4	520	130	1,203	301	1.82	662
Total	286	1.87	81	9,638	119	18,003	222	33.70	534
Puddlers, boss	286	1.00	1	304	304	567	567	1.06	532
	286	2.61	1	294	294	753	753	1.03	733
Total	286	2.20½	2	598	299	1,320	660	2.09	631
Puddlers' helpers.....	286	.71	21	1,139	54	807	38	3.98	203
	286	.95	16	1,592	100	1,514	95	6.57	272
	286	1.21	31	4,901	158	5,922	191	17.14	346
	286	1.35	13	2,013	155	2,722	209	7.04	387
Total	286	1.13½	81	9,645	119	10,965	135	33.73	325

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —. —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ea.	Days of work done.		Earnings.		Neces- sary em- ployea.	Conse- quent average earnings per em- ployea.
				Total.	Aver- age.	Total.	Aver- age.		
Rollers	286	(a)	4	(a)	(a)	\$2,995	\$749	(a)	(a)
Roughers	286	(a)	18	(a)	(a)	5,137	285	(a)	(a)
Rougher and yard hand	256	(a)	1	(a)	(a)	67	67	(a)	(a)
Shipper	313	\$1.85	1	342	342	632	632	1.00	\$573
Stickers-in	286	(a)	3	(a)	(a)	627	209	(a)	(a)
Stocker	286	(a)	1	(a)	(a)	727	727	(a)	(a)
Weighman	313	1.20	1	248	248	291	291	0.79	367
Yardmaster	313	1.75	1	227	227	389	389	0.73	536
Yardmen	313	.75	13	1,076	83	811	62	3.44	236
	313	.80	1	44	44	35	35	0.14	249
	313	.85	2	33	17	28	14	0.11	266
Total	313	.76	16	1,153	72	874	55	3.69	237
The establishment		(b)	368	(b)	(b)	65,231	177	(b)	(b)

ESTABLISHMENT No. —.

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Ashmen	313	\$1.35	5	668	134	\$917	\$183	2.13	\$430
	313	1.70	1	177	177	301	301	0.57	532
Total	313	1.44	6	845	141	1,218	203	2.70	451
Ashman and fireman	313	1.45	1	239	239	347	347	0.76	454
Blacksmiths	313	2.40	3	689	230	1,648	549	2.20	749
	313	2.97½	1	292	292	870	870	0.93	933
Total	313	2.56½	4	981	245	2,518	630	3.13	803
Blacksmith and blacksmiths' helper	313	1.98	1	46	46	91	91	0.15	619
Blacksmiths' helpers	313	1.50½	8	1,346	168	2,147	268	4.30	499
Blacksmiths' helper and oiler	313	1.53	1	68	68	104	104	0.22	479
Bolt cutters	313	1.21	7	714	102	865	124	2.28	379
	313	1.42	2	262	131	372	186	0.84	444
	313	1.71	1	152	152	260	260	0.49	535
Total	313	1.32½	10	1,128	113	1,497	150	3.61	415
Bolt packers	313	.90	2	527	264	465	233	1.68	276
Bricklayers	313	3.00	4	7	2	21	5	0.02	939
	313	3.27½	2	66	33	216	108	0.21	1,024
	313	3.50	6	109	18	383	64	0.35	1,100
Total	313	3.40½	12	182	15	620	52	0.58	1,006
Bricklayers' helpers	313	1.25	2	590	295	739	370	1.88	392
Caller	313	1.67½	1	362	362	570	570	1.16	493
Carpenters	313	2.00	2	22	11	44	22	0.07	626
	313	2.20	1	28	28	62	62	0.09	693
	313	2.25	2	451	226	1,014	507	1.44	704
Total	313	2.23½	5	501	100	1,120	224	1.60	700

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

WAGES AND EARNINGS--Continued.

STATE--Continued.

Continued.

		Condition for period.				Condition if workmen had continuous employment.	
		Days of work done.		Earnings.		Necessary employees.	Consequent average earnings per employee.
		Total.	Average.	Total.	Average.		
		128	128	\$180	\$180	0.41	8381
		367	194	525	269	1.24	425
		300	300	338	338	0.98	363
		78	78	99	99	0.24	408
		233	117	403	202	0.74	541
		3	3	6	6	0.01	628
		70	70	157	157	0.22	703
		78	78	182	182	0.24	750
		287	98	1,034	345	0.92	1,128
		825	208	4,061	1,015	2.04	1,541
	13	1,370	121	8,943	457	5.01	1,183
		285	285	289	289	0.65	441
		179	179	293	293	0.41	711
		258	258	882	869	0.83	1,079
	2	345	184	1,184	563	1.24	937
		241	241	829	529	0.77	697
		173	173	207	207	0.28	738
		173	173	783	783	0.55	1,417
	3	269	90	278	92	0.66	321
		126	68	148	74	0.43	341
		1,075	128	1,840	188	4.39	429
	15	1,790	119	2,304	154	5.08	608
		282	282	313	313	0.64	374
		100	100	115	115	0.22	360
		128	128	160	160	0.41	391
		215	166	298	165	0.69	421
	4	443	111	564	141	1.42	388
		102	102	62	62	0.22	189
		206	206	136	136	0.66	263
		206	206	142	142	0.68	216
		144	144	124	124	0.49	279
		208	208	201	201	0.66	302
	5	366	174	645	133	2.77	240
		146	146	241	241	0.47	517
		344	344	1,878	574	3.02	723
		878	878	649	649	0.99	657
		882	882	1,068	452	2.82	698
		201	201	694	694	1.48	722
	6	582	215	1,430	434	5.10	634
		275	275	685	475	0.48	329
		88	88	181	181	0.25	644
	7	364	82	646	113	1.15	537
		147	147	1,075	200	4.77	502
		201	201	1,075	200	0.40	1,400
		478	478	1,075	200	0.21	423
		67	67	75	75	0.15	480

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —. —Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Diff. ferent employ- es.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per employé.
				Total.	Aver- age.	Total.	Aver- age.		
Firemen and laborers.....	313	\$1.44½	5	633	127	\$915	\$183	2.02	\$452
	313	1.73	1	217	217	375	375	0.60	541
Total	313	1.52	6	850	142	1,290	215	2.71	475
Firemen and water tenders...	313	1.76½	2	655	328	1,155	578	2.09	552
Foremen	313	2.11	1	313	313	660	660	1.00	660
	313	2.85	3	947	316	2,697	899	3.03	891
Total	313	2.66½	4	1,260	315	3,357	839	4.03	834
Foreman, blacksmiths	313	3.45	1	302	302	1,042	1,042	0.96	1,080
Foreman, bricklayers	313	4.31½	1	313	313	1,350	1,350	1.00	1,350
Foremen, gashouse	365	2.50	2	709	355	1,773	887	1.94	913
Foreman and heater	313	4.43½	1	307	307	1,362	1,362	0.98	1,389
Heaters.....	313	3.41	2	142	71	484	242	0.45	1,067
	313	3.88	2	343	173	1,342	671	1.11	1,214
	313	4.09½	2	466	233	1,909	955	1.49	1,282
	313	4.47	1	136	136	608	608	0.43	1,309
	313	4.52½	2	145	73	656	328	0.46	1,416
	313	5.15	1	14	14	72	72	0.04	1,610
	313	5.65	3	399	133	2,254	751	1.27	1,768
	313	5.98	3	526	175	3,146	1,049	1.68	1,872
	313	6.11½	5	1,184	237	7,242	1,448	3.78	1,914
	313	6.86	2	399	200	2,738	1,369	1.27	2,148
	313	7.00½	1	235	235	1,667	1,667	0.75	2,220
	313	7.38	1	243	243	1,793	1,793	0.78	2,310
Total	313	5.64½	25	4,235	169	23,911	956	13.51	1,767
Heaters and heaters' helpers...	313	3.43	1	206	206	704	704	0.66	1,070
	313	3.74	2	244	122	912	456	0.78	1,170
	313	4.73	2	459	230	2,171	1,086	1.47	1,480
Total	313	4.16½	5	909	182	3,787	757	2.91	1,304
Heaters' helpers	313	1.75	1	113	113	195	195	0.36	540
	313	2.00	7	1,092	156	2,218	317	3.49	636
	313	2.13	3	322	107	686	229	1.03	667
	313	2.25	17	2,033	120	4,511	265	6.50	696
	313	2.42	1	260	260	629	629	0.83	757
	313	2.92	1	190	190	556	556	0.61	916
Total	313	2.19½	30	4,010	134	8,793	293	12.82	686
Heaters' helpers and laborers.	313	1.85	5	784	157	1,450	290	2.50	579
Heaters' helpers and pilers ...	313	1.79	2	460	230	823	412	1.47	560
Heaters' helper and puddlers' helper.	313	2.15½	1	141	141	304	304	0.45	675
Hookers-up	313	1.25	2	152	76	190	95	0.49	391
	313	1.35	3	332	111	446	149	1.06	420
	313	1.50	1	136	136	205	205	0.43	472
	313	1.65	1	225	225	371	371	0.72	516
	313	1.75	3	461	154	804	268	1.47	546
	313	1.80	7	1,040	149	1,875	268	3.32	564
	313	2.26½	1	52	52	119	119	0.17	716
Total	313	1.67	18	2,398	133	4,010	223	7.66	523
Hookers-up and laborers.....	313	1.09½	1	166	166	182	182	0.53	343
	313	1.36½	1	80	80	109	109	0.26	426
Total	313	1.18½	2	246	123	291	146	0.79	379

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition of period.				Condition if workmen had continuous employment.		
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployee.
				Total.	Aver- age.	Total.	Aver- age.		
Boiler tender	313	\$1.50	1	241	241	\$357	\$357	0.77	\$464
Catchers.....	286	1.00	1	5	5	8	8	0.02	458
	286	(a)	12	(a)	(a)	3,739	312	(a)	(a)
Total	286	(b)	12	(b)	(b)	3,747	288	(b)	(b)
Catcher and hooker-up.....	286	(a)	1	(a)	(a)	164	164	(a)	(a)
Catcher and sticker-in.....	286	(a)	1	(a)	(a)	309	309	(a)	(a)
Engineers	313	1.50	1	320	320	469	469	1.02	450
	313	2.00	1	318	318	620	620	1.02	610
Total	313	1.70½	2	638	319	1,089	545	2.04	534
Foreman.....	313	2.00	1	4	4	12	12	0.01	939
Heaters.....	286	(a)	7	(a)	(a)	2,878	411	(a)	(a)
Heater and rougher	286	(a)	1	(a)	(a)	35	35	(a)	(a)
Heaters' helpers.....	286	.75	1	68	68	52	52	0.24	219
	286	1.00	1	201	201	201	201	0.70	286
	286	(a)	7	(a)	(a)	1,444	206	(a)	(a)
Total	286	(b)	9	(b)	(b)	1,697	189	(b)	(b)
Hookers-up	286	(a)	2	(a)	(a)	294	147	(a)	(b)
Hooker-up and laborer.....	286	(a)	1	(a)	(a)	138	138	(a)	(a)
Hooker-up and rougher.....	286	(a)	1	(a)	(a)	172	172	(a)	(a)
Laborers.....	313	.75	11	690	63	526	48	2.20	239
	313	.82	1	262	262	212	212	0.84	253
	313	.90	42	4,295	102	3,868	92	13.72	282
	313	.95	25	3,424	137	3,260	130	10.04	296
	313	1.00	35	3,809	109	3,805	109	12.17	312
	313	1.10	2	231	116	249	125	0.74	337
	313	1.12	1	97	97	111	111	0.31	358
	313	1.20	1	240	240	283	283	0.77	369
Total	313	.94½	118	13,048	111	12,312	104	41.69	295
Puddlers	286	1.14	16	756	47	862	54	2.64	326
	286	1.36½	8	754	94	1,030	129	2.64	391
	286	1.62½	14	1,478	106	2,402	172	5.17	465
	286	1.86	13	1,836	141	3,417	263	6.42	532
	286	2.11½	26	4,294	165	9,089	350	15.01	605
	286	2.31½	4	520	130	1,203	301	1.82	662
Total	286	1.87	81	9,638	119	18,003	222	33.70	534
Puddlers, boss	286	1.00	1	304	304	567	567	1.06	533
	286	2.61	1	294	294	753	753	1.03	733
Total	286	2.20½	2	598	299	1,320	660	2.09	631
Puddlers' helpers.....	286	.71	21	1,189	54	807	33	3.98	203
	286	.95	16	1,592	100	1,514	95	5.57	272
	286	1.21	31	4,901	158	5,922	191	17.14	346
	286	1.35	13	2,013	155	2,722	209	7.04	387
Total	286	1.13½	81	9,645	119	10,965	135	33.73	325

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —. —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployee.
				Total	Aver- age.	Total.	Aver- age.		
Nut dresser	313	\$1.45½	1	101	101	\$147	\$147	0.32	\$456
Nut tappers	313	1.56½	2	87	44	136	68	0.28	489
Oilers	313	1.35	4	571	143	759	190	1.82	416
	313	1.57½	1	810	310	488	488	0.99	493
Total	313	1.41½	5	881	176	1,247	249	2.81	443
Oiler and puddlers' helper....	313	1.54½	1	191	191	295	295	0.61	483
Packers	313	.95	1	181	181	172	172	0.58	297
	313	1.35	1	87	87	119	119	0.28	428
Total	313	1.08½	2	268	134	291	146	0.86	340
Pilers	313	1.35	7	1,492	213	2,017	288	4.77	423
	313	1.45	1	255	255	363	363	0.81	446
	313	1.57½	1	227	227	353	353	0.73	487
	313	1.65	1	204	204	339	339	0.65	520
Total	313	1.41	10	2,178	218	3,072	307	6.96	441
Policemen	313	1.25	2	267	134	333	167	0.85	390
Puddlers	313	3.28	1	82	82	266	266	0.26	1,012
	313	3.65	2	141	71	515	258	0.45	1,143
	313	3.88½	3	438	146	1,702	567	1.40	1,216
	313	4.10	6	1,017	170	4,170	695	3.25	1,283
	313	4.60½	1	202	202	930	930	0.65	1,441
	313	4.74½	1	141	141	669	669	0.45	1,485
Total	313	4.08½	14	2,021	144	8,251	569	6.46	1,278
Puddler and puddlers' helper.	313	3.20½	1	204	204	654	654	0.65	1,003
Puddlers' helpers	313	1.15½	1	32	32	37	37	0.10	362
	313	1.53	1	32	32	49	49	0.10	479
	313	1.89½	6	255	59	672	112	1.13	592
	313	2.02	8	1,062	133	2,146	268	2.39	632
	313	2.03	2	418	209	1,100	550	1.34	824
	313	2.77	1	201	201	557	557	0.64	867
Total	313	2.17	19	2,100	111	4,561	240	6.70	680
Puddlers' helper and rougher- up.	313	2.20	1	86	86	189	189	0.27	688
Puddlers' helper and shear- men's helper.	313	1.54	1	74	74	114	114	0.24	483
Pullers-down	313	1.35	2	376	188	520	260	1.20	433
	313	1.57½	4	825	206	1,303	326	2.64	494
	313	1.80	4	687	172	1,251	313	2.19	570
Total	313	1.63	10	1,888	189	3,074	307	6.03	510
Pullers-up	313	1.00	1	96	96	93	93	0.31	303
	313	1.25	3	580	177	661	220	1.69	300
Total	313	1.20½	4	626	157	754	189	2.00	377
Punchers	313	1.80	3	456	152	843	281	1.46	579
	313	2.34½	2	91	46	214	107	0.29	736
Total	313	1.93	5	547	109	1,057	211	1.75	605
Reversers	313	1.12½	5	615	123	690	138	1.96	351
	313	1.20	4	637	159	769	192	2.04	378
Total	313	1.16½	9	1,252	189	1,459	162	4.00	365

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff- erence em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ploy- ed.
				Total.	Aver- age.	Total.	Aver- age.	
Carpenters' helper.....	313	\$1.25	1	128	128	\$180	\$180	0.41
Cartmen.....	313	1.25	2	287	194	325	302	1.24
Cartmen's helper.....	313	1.12½	1	300	300	338	338	0.96
Catchers.....	313	1.30½	1	76	76	99	99	0.24
	313	1.73	2	213	117	428	202	0.74
	313	2.00	1	3	3	6	6	0.01
	313	2.24½	1	70	70	157	157	0.22
	313	2.39½	1	76	76	182	182	0.24
	313	3.00½	3	287	96	1,034	345	0.93
	313	4.81	4	825	208	4,061	1,015	2.04
Total.....	313	2.75½	13	1,570	121	3,043	457	5.01
Catcher and hooker-up.....	313	1.41	1	205	205	289	289	0.65
Catchers and roughers.....	313	2.27	1	129	129	293	292	0.41
	313	3.45	1	228	228	893	893	0.83
Total.....	313	3.05½	2	313	194	1,196	582	1.24
Catcher and straightener.....	313	2.20	1	211	241	529	529	0.77
Charger.....	313	2.25	1	49	49	207	207	0.28
Charger and heater.....	313	4.53½	1	173	173	783	783	0.55
Cindermen.....	313	1.85	3	269	80	376	92	0.43
	313	1.08	2	138	68	148	74	0.43
	313	1.35	10	1,375	138	1,830	186	4.39
Total.....	313	1.29½	15	1,780	119	2,304	154	5.08
Cinderman and laborer.....	313	1.19½	1	202	202	313	313	0.54
Counters.....	313	1.15	1	100	100	115	115	0.32
	313	1.25	1	128	128	180	180	0.41
	313	1.35	2	215	108	380	145	0.69
Total.....	313	1.27½	4	443	111	684	141	1.42
Door boys.....	313	.60	1	102	102	63	63	0.33
	313	.68	1	208	208	138	138	0.66
	313	.70	1	206	206	142	142	0.69
	313	.86	1	144	144	124	124	0.66
	313	1.00	1	208	208	201	201	0.66
Total.....	313	.79½	6	868	174	665	133	2.77
Engineers.....	313	1.66	1	146	146	241	241	0.47
	313	2.00	6	944	189	1,878	378	3.02
	313	2.10	1	309	309	649	649	0.99
	313	2.25	4	882	221	1,968	492	2.83
	313	2.30	1	301	301	694	694	0.96
Total.....	313	2.10½	12	2,582	215	5,430	458	8.28
Engineers and machinists.....	313	1.80	1	275	275	465	465	0.78
	313	2.06½	1	68	68	181	181	0.28
Total.....	313	1.78	2	343	182	646	322	1.16
Firemen.....	313	1.80	14	1,071	161	3,162	226	6.30
Fireman, furnace.....	313	4.71	1	291	291	1,371	1,371	0.93
Firemen, gasboilers.....	313	1.85	48	8,727	141	8,545	180	20.21
Fireman and hooker-up.....	313	1.60½	1	47	47	76	76	0.15

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. — —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Slotters.....	313	\$1.35	1	29	29	\$38	\$38	0.09	\$410
	313	1.46	1	37	37	53	53	0.12	448
	313	1.71½	1	48	48	82	82	0.15	535
	313	2.22	1	150	150	332	332	0.48	693
Total	313	1.91½	4	264	66	505	126	0.84	599
Sticker-in.....	313	2.25	1	56	56	125	125	0.18	699
Stocker.....	313	1.75	1	238	238	396	396	0.76	523
Straighteners.....	313	1.35	5	405	81	553	111	1.29	427
	313	1.57½	14	2,298	164	3,629	259	7.34	494
	313	1.75	1	106	106	185	185	0.34	546
Total	313	1.55½	20	2,809	140	4,367	218	8.97	487
Switchman	313	1.91½	1	117	117	223	223	0.37	597
Teamsters	313	1.12½	3	111	37	125	42	0.35	363
	313	1.35	1	313	313	414	414	1.00	414
Total	313	1.27	4	424	106	539	135	1.35	398
Telegraphmen	313	1.35	1	67	67	90	90	0.21	420
	313	1.55½	1	31	31	48	48	0.10	485
	313	1.70	6	606	101	1,039	173	1.94	537
	313	1.80	1	236	236	431	431	0.75	572
	313	2.00	2	369	185	757	379	1.18	642
Total	313	1.80½	11	1,309	119	2,365	215	4.18	566
Water boy.....	313	.65	1	17	17	11	11	0.05	208
Water tenders.....	313	2.12½	4	1,264	316	2,690	673	4.64	696
Weighmen.....	313	1.50	1	87	87	127	127	0.28	457
	313	1.61½	1	98	98	159	159	0.31	509
	313	1.72½	1	313	313	540	540	1.00	540
	313	1.75	3	352	117	628	209	1.12	558
	313	2.00	1	264	264	526	526	0.84	624
Total	313	1.77½	7	1,114	159	1,980	283	3.55	556
Yardmaster.....	313	2.72	1	313	313	852	852	1.00	852
The establishment.....	.....	1.91½	1,371	138,225	101	264,865	193	441.20	600

ESTABLISHMENT No. —.

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Alley-men.....	287	\$1.75	2	412	206	\$725	\$363	1.44	\$505
Assistants at furnace.....	287	1.67	1	50	50	83	83	0.17	476
	287	1.75	1	87	87	151	151	0.30	496
	287	1.85	2	350	175	651	326	1.23	534
Total	287	1.81½	4	487	123	865	221	1.09	522
Blacksmith	313	3.60	1	310	310	1,120	1,120	0.99	1,131
Blacksmith's helpers	313	1.81½	3	927	309	1,624	541	2.96	569
Bloom boy.....	287	1.50	1	235	235	353	353	.82	431
Boilermen and gasmen.....	313	1.71½	2	356	178	610	305	1.14	526
Bricklayers	313	4.00	4	338	85	1,352	338	1.08	1,233

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. ————Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Different employ-ees.	Days of work done.		Earnings.		Neces-sary em-ploy-ees.	Conse-quent average earnings per em-ploy-ee.
				Total.	Average.	Total.	Average.		
Hookers-up and roughers.....	313 313	\$1.73 2.23	1 2	313 324	313 112	\$380 501	\$380 251	0.88 0.72	\$558 709
Total	313	2.01	3	437	146	891	294	1.40	631
Hooker-up and straightener	313	1.50	1	198	198	297	297	0.63	470
Janitor	313	1.35	1	204	204	416	416	0.98	423
Laborers.....	313 313 313 313 313 313 313 313 313 313 313 313 313 313 313	1.05 1.10 1.124 1.20 1.25 1.30 1.35 1.40 1.45 1.50 1.62 1.614 2.00	8 11 236 23 37 1 273 30 27 18 5 13 1	137 508 14,031 1,065 2,588 189 18,163 2,470 3,077 1,204 317 3,045 307	27 46 50 43 69 190 67 82 77 75 63 224 307	143 565 18,640 1,207 3,195 333 24,448 3,432 3,049 1,848 516 8,920 614	29 56 67 51 86 233 90 114 113 116 102 423 614	0.44 1.02 44.83 2.40 8.11 0.38 58.03 7.89 6.64 3.85 1.01 9.73 0.98	327 513 353 373 364 406 421 435 459 480 509 547 670
Total	313	1.314	679	48,040	68	69,655	89	147 11	412
Laborers (boys).....	313 313 313 313 313 313 313 313 313 313 313 313 313 313 313	.60 .70 .80 .88 .90 .96 1.00 1.15 1.20	1 45 7 49 11 8 8 1 8	1,423 931 2,410 903 277 346 54 211	8 32 70 82 55 48 64 70	8 1,000 737 2,892 517 385 61 248	8 22 104 59 74 61 68 63	0.03 4.54 2.97 10.49 2.88 0.86 1.23 0.17	198 220 244 265 283 290 312 354 368
Total	313	.84	130	7,602	58	6,382	49	24.28	263
Laborers and puddlers' helpers.....	313 313	1.51 2.21	2 1	129 24	62 24	186 53	93 53	0.29 0.08	473 691
Total	313	1.624	3	147	49	239	80	0.47	609
Laborers and punchers	313 313	1.684 2.00	1 1	83 183	63 183	138 366	138 366	0.27 0.58	530 630
Total	313	1.884	2	266	133	504	252	0.85	568
Laborer and reverser.....	313	1.80	1	227	227	362	362	0.73	409
Laborers and shear-men.....	313	1.454	2	302	196	570	285	1.25	456
Laborers and straighteners.....	313 313	1.564 1.67	2 1	439 246	220 246	688 459	344 459	1.40 0.79	481 584
Total	313	1.674	3	685	228	1,147	382	2.19	534
Laborer and switchman.....	313	1.77	1	306	306	543	543	0.98	554
Laborer and telegraphman.....	313	1.554	1	226	226	343	343	0.70	487
Laborer and weighman.....	313	1.674	1	170	170	285	285	0.54	525
Machinists	313 313 313 313 313	1.26 2.20 2.50 2.75 3.20	1 3 2 7 1	282 327 211 1,547 281	282 164 106 221 261	361 720 537 4,233 928	361 360 284 608 928	0.50 1.04 0.67 4.94 0.90	423 689 732 680 1,084
Total	313	2.57	13	2,648	204	6,408	524	2.45	363

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. — —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Dis- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ploy- ees.	Conse- quent average earnings per em- ploy- ee.
				Total.	Aver- age.	Total.	Aver- age.		
Helper.....	287	\$1.87½	1	8	8	\$15	\$15	0.08	\$538
Hookers-up.....	287	1.70	5	1,150	232	1,970	394	4.04	458
Laborers.....	313	1.30	2	208	149	861	—	0.95	379
	313	1.25	70	2,678	38	2,358	43	8.54	393
	313	1.30	17	2,583	152	3,354	197	8.25	406
	313	1.25	28	2,102	75	2,822	101	0.72	420
	313	1.37½	15	837	66	1,183	77	2.67	431
	313	1.40	11	1,836	167	2,568	233	5.87	438
	313	1.45	12	2,441	150	2,970	173	4.00	451
	313	1.48	5	1,057	211	1,563	313	3.28	468
	313	1.50	8	835	83	1,255	153	2.67	470
	313	1.55	3	915	305	1,462	467	2.92	480
Total.....	313	1.30½	172	14,577	85	19,914	116	45.37	428
Laborers (boys).....	313	.45	8	804	76	374	34	1.93	142
Metal breakers.....	313	1.80	13	98	8	172	18	0.31	561
	313	1.85	4	754	189	1,288	247	2.41	576
Total.....	313	1.83½	15	859	87	—	104	2.73	574
Millwright.....	313	2.22	1	430	430	1,439	1,429	1.37	1,040
Millwrights, assistant.....	313	2.00	1	88	85	71	71	0.11	635
	313	2.10	1	419	419	879	879	1.34	637
Total.....	313	2.06½	2	454	227	850	475	1.45	665
Ore grinder.....	313	1.70	1	355	353	886	885	1.13	539
Ore wheeler.....	313	1.80	1	278	278	492	492	0.88	554
Poke-ins.....	287	1.50	5	1,223	244	1,833	287	4.20	431
Puddlers.....	287	3.40	109	14,746	135	50,137	480	51.28	978
Puddlers, boys.....	287	3.88	1	278	278	1,874	1,874	0.66	1,117
Puddlers' helpers.....	287	2.10	108	14,746	135	30,946	284	51.32	1,071
Pullers-up.....	287	1.25	3	100	33	190	36	0.56	257
Pullers-up (boys).....	287	.45	2	268	147	138	60	1.02	125
	287	.80	4	344	61	130	30	0.85	141
Total.....	287	.48	6	637	98	268	48	1.07	128
Roll turner.....	287	8.50	1	261	261	2,304	2,304	—	2,426
Rollers.....	287	3.00	1	229	229	684	684	0.79	861
	287	4.00	1	233	233	883	833	0.81	1,149
	287	5.00	2	505	253	2,670	1,285	1.76	1,461
	287	5.06	1	228	228	1,154	1,154	0.79	1,432
	287	6.16	1	235	235	1,448	1,448	0.82	1,768
	287	6.62	1	147	147	974	974	0.51	1,902
	287	7.60½	1	265	265	2,015	2,015	0.92	2,182
	287	9.75	1	254	254	3,477	3,477	0.80	2,799
	287	19.23	1	273	273	5,250	5,250	0.96	5,519
Total.....	287	7.39	10	2,368	237	17,604	1,790	8.24	2,121
Roughers.....	287	2.40	6	1,392	232	2,341	387	4.35	689
	287	3.24½	6	1,119	234	3,630	796	3.00	821
	287	2.54½	6	1,472	245	5,215	808	5.13	1,917
	287	3.88	1	365	265	1,623	1,075	0.92	1,113
Total.....	287	3.11	13	4,248	330	13,214	734	14.80	893
Mawyers.....	287	1.58	6	1,126	189	1,796	293	2.36	454
Scrap wheeler.....	287	1.51	1	380	380	588	588	1.86	434

a Contractor. Includes wages and profits.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.
				Total.	Aver- age.	Total.	Aver- age.	
Roll cleaners	312 313	\$1.12 1.35	1 1	279 243	279 243	\$314 328	\$314 328	0.39 0.78
Total	312	1.23	2	522	261	642	321	1.57
Roll turner	313	6.71	1	313	313	2,100	2,100	1.00
Rollers	312 313 312 313 312 313 312 313	3.50 5.40 6.28 7.22 7.71 7.06 6.78 6.84	3 1 1 3 1 2 1 1	279 5 126 461 166 275 110 105	160 5 126 233 166 138 110 105	1,001 27 791 3,352 1,280 2,100 983 928	661 27 791 1,676 1,280 1,096 983 928	0.30 0.02 0.40 1.46 0.53 0.88 0.35 0.34
Total	312	7.01	12	1,611	134	11,302	942	5.15
Roller and rougher-down	312	3.30	1	206	206	681	681	0.66
Roller and weighman	313	2.48	1	252	252	625	625	0.81
Rollers' helpers	312 313 312	2.00 2.25 2.64	6 1 1	897 106 129	179 106 129	1,794 237 839	359 237 339	2.87 0.34 0.41
Total	312	2.09	7	1,122	162	2,370	339	1.62
Roughers	312 313 312 313 312 313 312 313 312 313 312 313	2.32 2.60 2.75 3.00 3.33 3.49 3.82 4.02 4.28 4.48 5.04	1 3 1 1 4 2 2 5 1 2 2 1	2 8 4 7 273 90 289 558 27 92 263	3 2 4 7 68 45 145 113 27 47 263	7 8 11 21 916 814 1,104 2,242 115 417 1,827	7 4 11 21 229 157 552 448 115 209 1,327	0.01 0.01 0.01 0.02 0.87 0.20 0.92 1.78 0.09 0.30 0.84
Total	312	4.02	22	1,610	73	4,482	205	5.14
Roughers-down	312 313 312	2.48 3.62 3.65	1 6 5	23 645 823	23 104 165	57 2,837 3,160	57 300 633	0.07 2.06 2.63
Total	312	3.72	12	1,491	124	5,660	463	4.76
Roughers-down and straight- eners	313	3.00	2	446	223	1,337	668	1.42
Roughers-up	312 313 312 313 312 313 312 313	2.67 2.96 3.15 3.39 3.78 4.34	2 3 4 4 2 2 2 2	40 246 278 840 286 133	20 82 70 210 140 153	107 729 878 2,849 1,059 664	54 243 219 712 530 664	0.13 0.79 0.89 2.68 0.69 0.49
Total	312	3.42	16	1,837	115	6,284	382	5.67
Shearmen	312	1.61	23	3,689	160	5,354	239	11.79
Shearmen and shearmen's helper	313	1.43	1	176	176	263	263	0.56
Shearmen's helpers	312	1.52	6	1,472	245	2,347	375	4.70
Shipper	313	2.20	1	317	317	728	728	1.01

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. — —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployee.
				Total.	Aver- age.	Total.	Aver- age.		
Boiler cleaner	168	\$1.00	1	73	73	\$73	73	\$0.43	\$168
Bricklayer	168	3.50	1	168	168	588	588	1.00	588
Bricklayer's helper	168	2.25	1	190	190	428	428	1.13	378
Bundler	168	(a)	1	(a)	(a)	223	223	(a)	(a)
Carpenters	168	3.00	2	27	9	80	27	0.16	498
Catchers	168	(a)	2	(a)	(a)	905	453	(a)	(a)
Catchers' helpers	168	(a)	2	(a)	(a)	100	50	(a)	(a)
Cinder wheelers	168	1.50	4	56	14	81	20	0.23	243
	168	1.75	1	131	131	227	227	0.78	291
	168	2.00	1	37	37	74	74	0.23	336
Total	168	1.70½	6	224	37	382	64	1.33	287
Coke wheeler	168	1.00	1	142	142	142	142	0.85	168
Craneman	168	1.75	1	137	137	248	248	0.82	304
Drag-downs	168	2.25	4	168	42	378	95	1.00	378
	168	2.50	2	130	65	323	163	0.77	420
Total	168	2.36	6	293	50	703	117	1.77	396
Drag-down and heater	168	2.61	1	59	59	154	154	0.35	439
Drag-outs	168	1.50	1	83	83	132	132	0.49	267
	168	1.75	3	205	68	369	123	1.22	302
	168	1.90	8	616	77	1,149	144	2.67	313
Total	168	1.82½	12	904	75	1,650	138	5.38	307
Engineer	168	1.75	1	87	87	153	153	0.52	295
Engineers, axle hammer	168	1.50	1	15	15	22	22	0.09	246
	168	2.00	3	103	34	206	69	0.61	336
	168	(a)	2	(a)	(a)	176	88	(a)	(a)
Total	168	(b)	6	(b)	(b)	404	67	(b)	(b)
Engineer, chief	168	4.00	1	168	168	649	649	0.99	657
Engineer, shape hammer	168	3.00	1	163	163	502	502	0.97	517
Firemen	168	1.53½	1	80	80	123	123	0.48	258
	168	1.66½	3	174	58	290	97	1.04	280
	168	1.83½	1	153	153	281	281	0.91	309
	168	2.00	1	25	25	49	49	0.15	329
Total	168	1.72	6	432	72	743	124	2.58	289
Firemen, axle hammer	168	1.66½	1	138	138	238	238	0.82	290
	168	1.80	5	95	19	170	34	0.57	301
	168	2.15	1	40	40	87	87	0.24	365
	168	(a)	1	(a)	(a)	8	8	(a)	(a)
Total	168	(b)	8	(b)	(b)	503	63	(b)	(b)
Firemen, boiler	168	1.50	1	171	171	261	261	1.02	256
	168	1.75	1	57	57	100	100	0.34	295
	168	1.86	2	127	64	236	118	0.76	312
	168	2.00	1	24	24	48	48	0.14	336
	168	2.35	1	168	168	395	395	1.00	395
Total	168	1.90	6	547	91	1,040	173	2.28	319

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

TABLE 10. - EMPLOYMENT IN MANUFACTURING INDUSTRIES - Continued.

A. - EMPLOYMENT IN MANUFACTURING INDUSTRIES - Continued.

Industry	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Condition if workers had continuous employment
Food and kindred products	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	(a)
Textile mill and apparel	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	(a)
Chemical and allied products	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	(a)
Non-metallic mineral products	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	(a)
Metallic mineral products	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	(a)
Transportation equipment	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	(a)
Electrical, electronic and other instruments	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	(a)
Other manufacturing industries	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	(a)
Total	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	800,000	200,000	1,000,000	(a)

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ée.	Days of work done.		Earnings.		Neces- sary em- ployée.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Roughers.....	168 168	\$1.57 (a)	1 6	14 (a)	14 (a)	\$23 989	\$23 165	0.08 (a)	\$284 (a)
Total	168	(b)	7	(b)	(b)	1,011	144	(b)	(b)
Scrap heaters.....	168	(a)	7	(a)	(a)	6,496	928	(a)	(a)
Scrap pilers	168	(a)	13	(a)	(a)	2,025	156	(a)	(a)
Shape hammerman	168	8.03½	1	164	164	1,318	1,318	0.98	1,350
Shape hammerman's helpers..	168 168	2.00 2.25	1 1	176 147	176 147	365 334	365 334	1.05 0.88	348 383
Total	168	2.16½	2	323	162	609	350	1.93	364
Shearmen	168 168 168 168 168	1.50 1.66½ 1.83½ 2.00 2.23	8 3 1 2 2	436 307 124 90 296	55 154 124 45 148	671 522 223 178 660	84 261 223 89 330	2.60 1.83 0.74 0.54 1.76	250 286 302 332 375
Total	168	1.80	15	1,253	84	2,254	150	7.47	302
Stockers	166 168	1.00 1.25	2 2	91 174	46 87	91 209	46 105	0.54 1.04	168 202
Total	168	1.18	4	265	66	300	75	1.58	196
Swarf wheelers.....	168	.75	8	38	13	28	9	0.23	124
Watchmen	168 168 168 168	1.25 1.60 1.85½ 2.00	1 1 1 1	192 5 118 39	192 5 118 39	234 8 219 78	234 8 219 78	1.14 0.03 0.70 0.23	205 200 312 336
Total	168	1.52½	4	354	89	539	135	2.10	256
The establishment.....	.....	(b)	331	(b)	(b)	64,872	196	(b)	(b)

ESTABLISHMENT No. —.

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Ashmen	155	\$1.29½	2	108	54	\$140	\$70	0.70	\$201
Ashman and stoker.....	155	1.25	1	8	8	10	10	0.05	194
Blacksmiths.....	155 155 155	2.40 2.45 3.25	1 2 1	62 63 157	62 32 157	146 155 511	146 78 511	0.40 0.41 1.01	365 381 504
Total	155	2.88	4	282	71	812	203	1.82	446
Blacksmiths' helpers	155 155	1.45 1.60	3 2	394 249	131 125	571 401	190 201	2.54 1.61	225 250
Total	155	1.51	6	643	129	972	194	4.15	234
Boiler tenders	155	1.75	4	729	182	1,280	320	4.70	272
Boiler tender and engineer ...	155	1.86	1	110	116	216	216	0.75	280
Boilermen	155	1.75	5	399	80	694	139	2.57	270
Boilerman and painter.....	155	2.16½	1	12	12	26	26	0.08	336
Buggymen.....	155	1.57	6	182	22	207	35	0.85	243

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

C.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —, —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Dis- turb- ances em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ploy- ees.	Conse- quent average earnings per em- ployee.
				Total.	Aver- age.	Total.	Aver- age.		
Buggyman and heater's helper.	155	\$1.33	1	8	6	\$11	\$11	0.64	\$9.84
Bundler and laborer.	155	1.63	1	112	112	183	183	0.72	233
Caller.	155	1.50	1	179	179	269	269	1.15	233
Carpenters.	155	2.06	1	154	154	312	312	0.98	318
	155	2.20	2	154	77	335	335	0.99	360
	155	2.25	1	75	75	169	169	0.45	349
	155	2.50	1	81	91	227	227	0.50	367
	155	4.00	1	155	155	632	632	1.02	630
Total.	155	2.65	6	623	105	1,679	290	4.07	412
Catchers.	155	1.66	2	67	31	83	47	0.46	223
	155	1.69	1	16	16	34	34	0.12	263
	155	2.00	1	6	6	13	13	0.04	316
	155	2.50	2	34	8	50	19	0.13	362
Total.	155	1.77	7	119	16	196	28	0.71	275
Catchers and hookers.	155	2.00	2	76	38	152	78	0.49	310
Catchers and laborers.	155	1.44	2	86	19	55	28	0.25	274
	155	1.60	1	46	46	83	58	0.30	289
	155	2.00	1	81	31	83	67	0.30	319
Total.	155	1.74	4	209	39	200	56	0.75	279
Catcher and straightener.	155	1.61	1	72	72	116	116	0.46	250
Chargers.	155	1.25	14	150	11	189	13	0.97	194
Chargers and heaters' helpers.	155	1.26	2	66	33	83	42	0.43	188
Cindermen.	155	1.32	2	25	13	30	17	0.16	266
Cinderman and laborer.	155	1.33	1	3	3	4	4	0.02	307
Coal wheelers.	155	1.25	2	64	32	81	41	0.41	196
	155	1.31	4	236	59	306	77	1.52	301
	155	1.37	1	62	62	86	86	0.40	213
	155	1.40	2	185	93	230	130	1.10	217
	155	1.60	4	174	44	200	65	1.12	222
	155	1.67	1	68	68	108	108	0.44	248
Total.	155	1.38	14	789	56	1,100	79	5.08	216
Cranemen.	155	.90	2	113	57	102	51	0.73	140
Croppers.	155	1.25	2	148	49	183	62	0.85	194
	155	1.30	2	115	58	149	75	0.74	201
	155	1.38	1	66	66	105	105	0.44	229
	155	2.75	1	29	29	80	80	0.19	423
Total.	155	1.44	7	360	51	519	74	2.32	223
Croppers and laborers.	155	1.47	1	89	89	131	131	0.57	228
	155	2.05	1	106	106	221	221	0.86	221
Total.	155	1.80	2	195	68	352	176	1.25	280
Door boys.	155	.50	15	274	25	188	13	2.41	78
Door boy and lay-over.	155	.60	1	33	33	37	37	0.21	108
Door boys and stampers.	155	.64	2	86	43	55	28	0.55	89
Drag backs.	155	1.00	2	32	16	32	16	0.21	135
Drag-outs and lay-overs.	155	1.19	2	121	61	144	72	0.78	184
Dumper.	155	1.25	1	42	42	52	52	0.27	189
Dumper and heaters' helper.	155	1.48	1	82	53	77	77	0.34	220
Engineers.	155	1.30	2	108	54	141	71	0.70	202
	155	1.75	2	191	96	235	168	1.23	272
	155	2.00	3	232	68	646	130	2.14	302
Total.	155	1.78	8	631	79	1,128	128	4.97	271

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment	
			Dis- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.
				Total.	Aver- age.	Total.	Aver- age.	
Engineer and roller.....	185	\$2.00	1	2	2	84	84	8.01
Foreman, machinists.....	185	2.87½	1	135	135	450	450	1.00
Gasmakers.....	185	1.87	2	445	54	606	87	2.87
	185	1.88	2	251	126	422	211	1.82
Total.....	185	1.80½	10	600	70	1,118	112	4.40
Gasmaker and hammerman.....	185	3.03	1	21	31	84	84	0.20
Gasmaker and heaters' helper.....	185	2.40½	1	82	58	125	125	0.24
Gasmaker and laborer.....	185	1.38½	1	12	18	18	18	0.06
Gateman.....	185	1.80	1	176	176	264	264	1.14
Hammer driver.....	185	1.00	1	119	119	180	180	0.77
Hammerman.....	185	5.50	1	114	114	629	629	0.74
Hammerman and heaters' helper.....	185	1.48½	1	120	120	180	180	0.38
Hammerman and laborer.....	185	1.40	1	130	130	182	182	0.84
Hammermen's helpers.....	185	1.71½	3	230	77	305	122	1.48
Hammermen's helpers and laborers.....	185	1.58½	1	45	45	70	70	0.29
	185	2.30½	1	85	85	186	186	0.85
Total.....	185	2.04½	2	180	64	206	122	0.84
Heaters.....	185	2.68½	1	30	30	92	92	0.22
	185	3.17	1	125	125	390	390	0.81
	185	3.78½	1	47	47	170	170	0.20
	185	3.05	3	00	32	370	120	0.62
	185	4.00½	5	242	60	1,032	206	1.62
	185	4.47	4	90	25	430	110	0.62
Total.....	185	2.84½	15	604	44	2,515	168	4.22
Heater and heaters' helper.....	185	2.40	1	60	56	130	130	0.36
Heaters and laborers.....	185	1.70½	1	120	120	218	218	0.82
	185	2.68½	1	63	63	243	243	0.41
Total.....	185	2.41½	3	181	80	481	231	1.24
Heaters' helpers.....	185	1.87½	7	48	7	66	9	0.21
	185	1.62½	12	502	47	910	70	3.08
	185	1.97	4	104	26	265	51	0.67
	185	2.10½	2	75	38	150	70	0.48
Total.....	185	1.70½	25	700	28	1,345	54	5.00
Heaters' helpers and laborers.....	185	1.51	2	83	32	96	48	0.41
Heaters' helper and scrap- pers' helper.....	185	1.11	1	27	27	41	41	0.24
Hookers.....	185	1.00	1	2	2	3	2	0.81
	185	1.37½	2	8	4	11	6	0.06
	185	1.63	8	240	30	391	48	1.55
	185	2.00	2	4	2	8	4	0.60
Total.....	185	1.62	13	264	26	412	52	1.64
Hookers and laborers.....	185	1.43	2	37	19	59	27	0.24
Hooker and rougher-down.....	185	2.30	1	60	50	115	115	0.32
Hookers-in.....	185	1.40½	1	27	27	38	28	0.17
	185	1.80	1	71	71	122	122	0.40
Total.....	185	1.73½	2	98	40	170	85	0.62

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

C.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. — —Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Difference from employment.	Days of work done.		Earnings.		Necessary employes.	Consequent average earnings per employe.
				Total.	Average.	Total.	Average.		
Hookers-out	185	\$1.00	2	15	8	224	812	0.10	\$0.10
	185	2.00	2	113	57	230	113	0.73	2.10
Total	185	1.80	4	128	32	230	60	0.83	2.00
Hooker-out and laborer	185	1.44	1	45	45	85	65	0.29	2.04
Hooker-up	185	1.00	1	18	18	30	30	0.12	2.00
Hooker-up and laborer	185	1.40	1	34	24	35	35	0.15	2.00
Iron tester	185	1.91	1	72	72	130	130	0.46	2.07
Iron tester and stoker	185	1.00	1	105	105	170	170	0.60	2.07
Laborers	185	.75	0	133	15	60	11	0.06	1.15
	185	1.00	2	80	17	83	17	0.32	1.01
	185	1.00	51	1,440	18	1,811	23	2.35	1.04
	185	1.30	10	487	20	600	27	2.80	2.00
	185	1.25	0	207	66	540	91	2.56	2.10
	185	1.80	4	140	27	210	54	0.94	2.20
Total	185	1.30	110	2,523	22	2,313	28	14.00	1.00
Laborer and moulder	185	1.40	1	80	80	80	80	0.32	2.00
Laborer and pipe fitter	185	1.80	1	80	80	70	70	0.32	2.00
Laborer and rougher-down	185	2.20	1	17	17	30	30	0.11	2.00
Laborer and stocker	185	1.20	1	32	32	41	41	0.21	2.00
Laborer and straightener	185	1.07	1	80	80	77	77	0.25	2.00
Lay-overs	185	1.20	5	221	44	305	61	1.43	2.14
Lay-over and puncher	185	.84	1	36	36	32	32	0.25	1.11
Machinists	185	1.20	1	153	153	191	191	0.90	1.00
	185	1.70	1	21	21	36	36	0.14	2.00
	185	2.00	3	333	113	677	226	2.18	3.10
	185	2.20	2	231	111	480	243	1.43	3.61
	185	2.25	1	104	104	234	234	0.67	3.40
	185	2.45	4	323	131	1,280	320	3.37	3.70
	185	3.00	1	154	154	455	455	0.90	4.50
Total	185	2.22	12	1,514	116	2,350	258	8.77	2.44
Machinist and puncher	185	2.70	1	131	131	364	364	0.85	4.10
Machinists' helpers	185	.75	2	144	72	109	55	0.23	1.17
Masons	185	2.15	2	12	7	41	21	0.08	4.00
	185	4.00	1	10	10	40	40	0.06	6.00
Total	185	3.22	2	23	8	81	27	0.14	8.40
Masons' helpers	185	1.50	2	209	105	314	157	1.35	2.23
	185	1.00	1	137	137	222	222	0.88	2.31
Total	185	1.55	3	346	115	536	179	2.23	2.40
Machinist and puncher	185	1.40	1	40	40	57	57	0.20	2.21
Millwrights	185	2.25	2	215	108	483	242	1.39	3.40
Oil-room hands	185	1.37	1	90	90	136	136	0.84	2.12
	185	2.00	1	150	150	318	318	1.03	3.10
Total	185	1.76	2	250	120	654	227	1.67	2.75
Patternmakers	185	1.20	1	50	50	73	73	0.30	1.92
	185	2.50	1	150	150	540	540	1.01	3.63
Total	185	2.06	2	215	108	613	310	1.39	4.48
Pipe fitter	185	1.80	1	187	187	230	230	1.01	2.70
Policemen	185	1.50	7	870	82	800	123	3.74	2.30

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —. —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Punchers	155	\$0.75	2	21	11	\$16	\$8	0.14	\$118
	155	.87½	1	50	50	44	44	0.32	138
	155	1.00	3	257	32	284	33	1.68	159
	155	1.25	10	163	16	200	20	1.05	190
	155	1.33½	1	9	9	12	12	0.08	207
	155	1.70	1	100	100	170	170	0.65	264
Total	155	1.17½	23	600	20	706	31	3.88	182
Puncher and straightener	155	1.73	1	48	48	33	63	0.31	268
Roll turners	155	2.45	1	70	70	172	172	0.45	381
	155	4.00	1	159	159	636	636	1.03	620
Total	155	2.52½	2	220	115	808	404	1.48	547
Rollers	155	4.23	2	91	46	385	193	0.59	656
	155	4.46	1	63	63	281	281	0.41	691
	155	6.86	1	71	71	487	487	0.46	1,043
	155	7.35½	1	73	73	537	537	0.47	1,140
	155	7.47	1	77	77	575	575	0.50	1,157
Total	155	6.04	6	375	63	2,265	378	2.43	936
Rollers' helpers	155	2.17	2	93	47	292	101	0.60	337
	155	2.66	1	38	38	101	101	0.25	412
Total	155	2.31½	3	131	44	393	101	0.85	359
Rollers' helpers and roughers	155	2.40½	2	118	59	234	142	0.76	373
Roughers	155	1.50	1	4	4	6	6	0.03	233
	155	2.20½	4	155	39	342	86	1.00	342
	155	2.40	4	210	53	504	126	1.35	372
	155	2.79	3	167	56	451	150	1.08	419
	155	2.93½	1	47	47	138	138	0.30	456
Total	155	2.47	13	583	45	1,441	111	2.76	383
Rougher and rougher-down	155	1.97	1	68	68	134	134	0.44	305
Roughers and stickers-in	155	1.81	2	73	37	132	66	0.47	280
Roughers-down	155	2.52	1	27	27	68	68	0.17	300
	155	3.02½	2	133	67	402	201	0.88	463
Total	155	2.93½	3	160	53	470	157	1.03	456
Roughers-up	155	1.93	2	87	44	168	34	0.56	299
	155	2.52	2	112	37	282	94	0.72	390
	155	3.00½	1	21	21	65	65	0.14	460
Total	155	2.34	6	220	37	515	86	1.42	363
Rougher-up and straightener	155	1.65½	1	81	81	134	134	0.52	256
Runner	155	2.50	1	152	152	379	379	0.98	386
Scrap pilers	155	1.00	1	9	9	9	9	0.06	155
	155	2.12½	1	87	87	190	190	0.56	239
Total	155	2.07½	2	96	48	199	100	0.62	221
Scrap piler and scrapper	155	2.01	1	129	129	241	241	0.77	311
Scrappers	155	3.18	1	33	33	105	105	0.21	423
	155	3.61½	1	31	31	112	112	0.20	560
Total	155	2.39	2	64	32	217	109	0.41	526

TABLE XXX.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. ————Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Dis- ferent em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ployee.	Conse- quent average earnings per em- ployee.
				Total.	Aver- age.	Total.	Aver- age.		
Scrappers and scrappers' help- ers.	156	\$1.94½	1	28	28	\$48	\$48	0.17	\$288
Scrappers' helpers.....	155	1.00	1	4	4	4	4	0.03	155
	155	1.56	2	12	4	20	7	0.08	228
Total.....	156	1.61	4	17	4	26	6	0.11	219
Shipper.....	155	2.45	1	153	155	360	360	1.00	540
Shipper's helper.....	155	1.00½	1	14	14	22	22	0.09	263
Shovelers.....	155	1.37	5	100	40	273	55	1.28	213
Stampers.....	155	.86	2	25	13	21	11	0.16	130
Stakers-in.....	155	1.22	8	98	14	32	17	0.44	180
	155	1.34	8	284	37	300	80	1.80	280
	155	1.64	2	42	21	60	35	0.27	235
	155	1.84	1	26	50	107	107	0.37	300
Total.....	156	1.62	10	493	29	653	41	2.08	239
Stackers.....	155	.50	1	26	30	14	14	0.17	83
	155	.90	3	122	41	110	27	0.70	140
	155	1.00	3	42	14	42	14	0.27	185
	155	1.28	6	150	32	196	40	1.02	194
	155	1.25	2	95	40	127	64	0.61	207
	155	1.37½	3	85	18	75	25	0.23	211
	155	1.68½	1	66	66	154	154	0.81	251
	155	1.75	1	50	100	100	100	0.37	207
Total.....	156	1.26	19	661	34	620	43	4.19	186
Stacker, boss.....	155	2.50	1	100	100	250	250	0.65	286
Stokers.....	155	1.25	10	351	35	442	44	2.26	103
	156	1.37½	2	240	83	329	113	1.61	211
Total.....	155	1.30	12	600	48	781	60	2.87	202
Straighteners.....	155	1.33	9	253	28	343	38	1.63	211
	155	1.43	2	132	44	180	63	0.66	222
	155	1.80½	2	61	20	92	46	0.33	280
Total.....	155	1.62½	14	436	31	628	45	2.81	223
Straightener and water boy.....	155	1.00	1	33	33	33	53	0.21	240
Timekeeper.....	155	2.40	1	27	27	65	65	0.17	273
Timekeeper and yardmaster.....	155	2.32½	1	155	155	360	360	1.00	360
Water boys.....	155	.50	1	53	53	28	28	0.34	82
	155	1.25	4	57	14	71	18	0.37	193
Total.....	155	.90	5	110	22	99	20	0.71	140
Water gate man.....	155	.75	1	23	23	17	17	0.15	118
Weightmen.....	155	1.00	2	18	8	18	8	0.10	158
	155	1.25	1	16	16	20	20	0.10	194
	155	1.74	2	310	155	560	270	2.00	270
Total.....	156	1.68½	5	341	68	573	115	2.20	261
The establishment.....		1.80½	534	24,611	44	43,600	83	156.78	280

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total	Aver- age.	Total.	Aver- age.		
Acidman	313	\$1.50	1	292	292	\$438	\$438	0.93	\$470
Annealers	313	(a)	2	(a)	(a)	165	21	(a)	(a)
Annealers and annealers' help- ers	313	(a)	(b)	(a)	(a)	3,536	(b)	(a)	(a)
Back tongs men	313	(a)	3	(a)	(a)	2,139	1,046	(a)	(a)
Blacksmiths	313	2.75	1	310	310	850	850	0.99	858
	313	3.40	1	318	318	1,081	1,081	1.03	1,064
Total	313	2.07½	3	628	314	1,931	966	2.01	962
Blacksmiths' helpers	313	1.40	1	207	207	294	294	0.66	445
	313	1.50	1	314	314	482	482	1.00	480
Total	313	1.49	2	521	261	776	388	1.66	466
Boilermaker	313	(a)	1	(a)	(a)	414	414	(a)	(a)
Brakeman	313	1.75	1	309	309	559	559	0.99	566
Brander	313	1.75	1	302	302	515	515	0.96	524
Bricklayers	313	3.25	4	287	72	935	234	0.92	1,020
	313	3.50	2	326	163	1,134	567	1.04	1,089
	313	4.83	1	12	12	58	58	0.04	1,513
Total	313	3.40½	7	625	89	2,127	304	2.00	1,065
Bricklayers' helpers	313	1.40	2	335	168	472	236	1.07	441
Buggy-offs	313	1.50	3	293	98	439	146	0.94	469
	313	(a)	2	(a)	(a)	1,014	507	(a)	(a)
Total	313	(c)	5	(c)	(c)	1,453	291	(c)	(c)
Bundlers	313	1.50	1	61	61	92	92	0.19	472
	313	1.75	2	620	310	1,060	540	1.96	545
Total	313	1.72	3	681	237	1,172	391	2.17	539
Carpenters	313	1.50	1	58	58	90	90	0.19	486
	313	1.75	1	9	9	16	16	0.02	556
	313	2.00	3	340	113	649	216	1.00	597
	313	2.25	1	259	259	650	650	0.92	704
Total	313	2.02	6	696	116	1,405	234	2.22	622
Catchers	313	1.45	1	264	264	386	386	0.84	458
	313	1.50	1	12	12	18	18	0.04	470
	313	1.55	1	268	268	419	419	0.56	479
	313	1.80	3	727	242	1,308	436	2.32	563
	313	2.00	1	72	22	43	43	0.07	612
	313	(a)	2	(a)	(a)	1,928	964	(a)	(a)
Total	313	(c)	9	(c)	(c)	4,102	456	(c)	(c)
Cinder boys	313	.75	5	595	119	447	89	1.90	235
Cleaner	313	1.50	1	236	236	354	354	0.75	470
Dippers	313	2.25	4	1,170	293	2,615	654	3.74	700
	313	2.50	1	322	322	787	787	1.03	765
	313	2.80	1	297	297	831	831	0.95	876
Total	313	2.36½	6	1,789	296	4,233	706	5.72	741

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employes not given.

c No total can be made for the reason shown in footnote a.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Different employ- ees.	Days of work done.		Earnings.		Necessary employ- ees.	Conse- quent average earnings per employ- ee.
				Total.	Aver- age.	Total.	Aver- age.		
Scraper and scrapers' help- ers.	155	\$1.84½	1	26	26	\$48	\$48	0.17	\$208
Scrapers' helpers.....	155	1.00	1	4	4	4	4	0.03	155
	155	1.55	3	13	4	20	7	0.08	238
Total	155	1.41	4	17	4	24	6	0.11	219
Shipper.....	155	2.45	1	155	155	540	540	1.00	540
Shipper's helper	155	1.00½	1	14	14	23	23	0.09	253
Shovelers	155	1.37	5	190	40	278	55	1.28	213
Stampers	155	.84	2	25	13	21	11	0.16	130
Stickers-in.....	155	1.22	5	68	14	82	17	0.44	180
	155	1.24½	8	204	37	298	50	1.90	200
	155	1.64½	2	42	21	60	35	0.27	255
	155	1.84½	1	58	58	107	107	0.37	288
Total	155	1.42	16	462	29	655	41	2.08	220
Stockers	155	.50	1	26	26	14	14	0.17	83
	155	.90	3	123	41	110	37	0.70	140
	155	1.00	3	42	14	42	14	0.27	155
	155	1.25	5	158	32	198	40	1.02	194
	155	1.35	2	95	48	127	64	0.61	207
	155	1.37½	3	55	18	75	25	0.35	211
	155	1.62½	1	65	65	154	154	0.61	251
	155	1.75	1	58	58	100	100	0.37	267
Total	155	1.26	19	651	34	820	43	4.19	195
Stecker, boss	155	2.50	1	100	100	250	250	0.65	398
Stokers	155	1.25	10	351	35	442	44	2.26	193
	155	1.37½	3	249	83	339	113	1.61	211
Total	155	1.30	13	600	46	781	60	3.87	202
Straighteners.....	155	1.23	9	253	28	345	38	1.63	211
	155	1.43	3	132	44	180	63	0.55	222
	155	1.80½	2	51	26	92	46	0.33	280
Total	155	1.43½	14	436	31	626	45	2.81	223
Straightener and water boy...	155	1.00½	1	33	33	53	53	0.21	249
Timekeeper	155	2.40½	1	27	27	65	65	0.17	373
Timekeeper and yardmaster..	155	2.32½	1	155	155	360	360	1.00	360
Water boys.....	155	.50	1	53	53	28	28	0.34	82
	155	1.25	4	57	14	71	18	0.37	193
Total	155	.90	5	110	22	99	20	0.71	140
Water-gate man.....	155	.75	1	23	23	17	17	0.15	115
Weighmen.....	155	1.00	2	15	8	15	8	0.10	155
	155	1.25	1	16	16	20	20	0.10	194
	155	1.74	2	310	155	540	270	2.00	270
Total	155	1.68½	5	341	68	575	115	2.20	261
The establishment.....	.....	1.96½	554	24,611	44	45,860	83	158.78	280

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total	Aver- age.	Total.	Aver- age.		
Acidman	313	\$1.50	1	292	292	\$438	\$438	0.93	\$470
Annealers	313	(a)	2	(a)	(a)	165	21	(a)	(a)
Annealers and annealers' help- ers	313	(a)	(b)	(a)	(a)	3,538	(b)	(a)	(a)
Back tongmen	313	(a)	3	(a)	(a)	2,139	1,046	(a)	(a)
Blacksmiths	313	2.75	1	310	310	850	850	0.99	858
	313	3.40	1	318	318	1,081	1,081	1.03	1,084
Total	313	2.07½	2	628	314	1,931	966	2.01	962
Blacksmiths' helpers	313	1.40	1	207	207	294	294	0.66	445
	313	1.50	1	314	314	482	482	1.00	480
Total	313	1.49	2	521	261	776	388	1.66	466
Boilermaker	313	(a)	1	(a)	(a)	414	414	(a)	(a)
Brakeman	313	1.75	1	309	309	559	559	0.99	566
Brander	313	1.75	1	302	302	515	515	0.96	524
Bricklayers	313	3.25	4	287	72	935	234	0.92	1,020
	313	3.50	2	326	163	1,134	567	1.04	1,089
	313	4.83	1	12	12	58	58	0.04	1,513
Total	313	3.40½	7	625	89	2,127	304	2.00	1,065
Bricklayers' helpers	313	1.40	2	335	168	472	236	1.07	441
Buggy-offs	313	1.50	3	293	98	439	146	0.94	469
	313	(a)	2	(a)	(a)	1,014	507	(a)	(a)
Total	313	(c)	5	(c)	(c)	1,453	291	(c)	(c)
Bundlers	313	1.50	1	61	61	92	92	0.19	472
	313	1.75	2	620	310	1,090	540	1.96	545
Total	313	1.72	3	681	237	1,172	391	2.17	539
Carpenters	313	1.50	1	58	58	90	90	0.19	486
	313	1.75	1	9	9	16	16	0.02	556
	313	2.00	3	340	113	649	216	1.09	597
	313	2.25	1	269	269	650	650	0.92	704
Total	313	2.02	6	696	116	1,405	234	2.22	632
Catchers	313	1.45	1	264	264	386	386	0.84	458
	313	1.50	1	12	12	18	18	0.04	470
	313	1.55	1	268	268	419	419	0.56	499
	313	1.80	3	727	242	1,308	436	2.32	563
	313	2.00	1	22	22	43	43	0.07	612
	313	(a)	2	(a)	(a)	1,928	964	(a)	(a)
Total	313	(c)	9	(c)	(c)	4,102	456	(c)	(c)
Cinder boys	313	.75	5	595	119	447	89	1.90	235
Cleaner	313	1.50	1	236	236	354	354	0.75	470
Dippers	313	2.25	4	1,170	293	2,615	654	3.74	700
	313	2.50	1	322	322	787	787	1.03	765
	313	2.80	1	297	297	831	831	0.95	876
Total	313	2.36½	6	1,789	296	4,283	706	5.72	741

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employees not given.

c No total can be made for the reason shown in footnote a.

TABLE XVL.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

C.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. ————Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Days of work done.	Days of work done.	Earnings.		Necessary employ- ment.	Consequent average earnings per employ- ment.
			Total.	Average.	Total.	Average.		
Dipper and laborer	313	\$1.84	1	233	233	\$650	\$650	\$650
Doubliers	313	1.80	1	325	325	487	487	487
	313	1.80	2	500	500	837	400	400
	313	1.75	14	1,993	142	2,490	250	250
	313	1.85	1	304	304	570	570	570
Total	313	1.71	18	3,211	178	5,493	305	305
Doubler, sheet	313	.95	1	38	38	81	81	81
Doubler and laborer	313	(a)	1	(a)	(a)	10	10	(a)
Engineers	313	1.80	1	220	220	512	512	512
	313	2.00	4	1,180	295	2,361	500	500
	313	2.25	1	253	253	500	500	500
	313	2.20	1	34	34	75	75	75
	313	1.80	3	1,001	334	2,503	834	834
Total	313	2.16	10	2,788	279	4,033	603	603
Engineer, chief	313	4.25	1	310	310	1,337	1,337	1,337
Foremen	313	2.00	1	313	313	615	615	615
	313	4.50	1	137	137	617	617	617
Total	313	2.40	2	450	225	1,553	705	705
Foreman, laborers	313	2.25	1	318	318	710	710	710
Hammer drivers	313	1.65	3	550	295	971	480	480
	313	(a)	3	(a)	(a)	1,325	612	(a)
Total	313	(b)	5	(b)	(b)	2,008	581	(b)
Hammermen	313	(a)	6	(a)	(a)	4,414	1,104	(a)
Heaters	313	1.00	1	291	291	400	400	400
	313	1.75	1	308	308	530	530	530
	313	1.65	6	1,139	285	2,100	537	537
	313	2.00	10	2,411	241	4,531	453	453
	313	(a)	8	(a)	(a)	11,005	1,451	(a)
Total	313	(b)	24	(b)	(b)	19,536	814	(b)
Heaters' helpers	313	(a)	9	(a)	(a)	4,348	483	(a)
Hookers-up	313	1.35	1	62	62	84	84	84
	313	(a)	2	(a)	(a)	1,947	974	(a)
Total	313	(b)	3	(b)	(b)	2,031	677	(b)
Laborers	313	1.00	4	524	131	525	131	131
	313	1.25	3	62	31	79	40	40
	313	1.35	210	10,015	48	13,542	62	62
	313	1.40	14	996	71	1,300	90	90
	313	1.45	22	3,014	137	4,383	100	100
	313	1.50	26	4,291	113	6,453	109	109
	313	1.55	2	75	38	115	58	58
	313	1.55	9	1,579	175	2,500	285	285
	313	1.70	1	85	85	144	144	144
	313	1.70	3	75	38	120	70	70
	313	1.85	13	653	43	1,106	85	85
	313	2.25	1	31	31	60	60	60

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
 b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —. —Continued.

Occupation	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Laborers—concluded	313	\$2.66½	1	3	3	\$8	\$8	0.01	\$835
	313	(a)	24	(a)	(a)	4,468	186	(a)	(a)
	313	(a)	(b)	(a)	(a)	1,486	(b)	(a)	(a)
Total	313	(c)	(c)	(c)	(c)	36,419	(c)	(c)	(c)
Ladle men	313	(a)	7	(a)	(a)	1,709	244	(a)	(a)
Lever boys	313	1.50	2	563	281	800	400	1.80	446
Lever men	313	(a)	6	(a)	(a)	6,262	1,044	(a)	(a)
Machinists	313	3.00	1	229	229	686	686	0.73	938
	313	(a)	1	(a)	(a)	15	15	(a)	(a)
Total	313	(c)	2	(c)	(c)	701	361	(c)	(c)
Machinists' helpers	313	1.45	2	625	313	910	456	2.00	456
	313	1.50	1	311	311	466	466	0.99	466
Total	313	1.47	3	936	312	1,376	450	2.99	460
Mason	313	1.35	1	127	127	171	171	0.41	421
Matchers	313	1.50	1	18	18	26	26	0.06	452
	313	1.75	6	1,201	200	2,107	351	3.84	549
	313	1.85	5	1,107	230	2,211	442	3.82	578
Total	313	1.80	12	2,416	201	4,344	362	7.72	563
Melters	313	(a)	4	(a)	(a)	3,497	874	(a)	(a)
Melters' helpers	313	(a)	11	(a)	(a)	5,024	457	(a)	(a)
Millwright	313	4.50	1	137	137	617	617	0.44	1,410
Millwrights, assistant	313	1.65	1	328	328	554	554	1.05	529
	313	1.75	1	316	316	553	553	1.01	548
Total	313	1.72	2	644	322	1,107	554	2.06	538
Office boys	313	.41½	2	312	156	131	66	1.00	131
Ore grinder	313	1.50	1	832	832	489	489	1.06	460
Picklers	313	1.50	1	404	404	606	606	1.29	470
	313	1.75	2	785	393	1,363	682	2.51	543
	313	2.00	1	409	409	810	810	1.31	620
Total	313	1.74	4	1,598	400	2,779	695	5.11	544
Picklers' helpers	313	1.50	5	1,243	249	1,889	378	3.97	476
	313	1.64	1	408	408	669	669	1.30	512
Total	313	1.55	6	1,651	275	2,558	426	5.27	485
Pipe line boss	313	2.50	1	131	131	325	325	0.43	777
Pitmen	313	1.35	1	283	283	362	382	0.90	422
	313	(a)	8	(a)	(a)	2,661	333	(a)	(a)
Total	313	(c)	9	(c)	(c)	3,043	333	(c)	(c)
Puddlers	313	(a)	18	(a)	(a)	15,402	856	(a)	(a)
Puddlers' helpers	313	(a)	18	(a)	(a)	9,500	533	(a)	(a)
Pullers-up	313	.75	5	650	130	487	97	2.08	235
Roll turner	313	4.87	1	318	318	1,548	1,548	1.02	1,524

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employes not given.

c No total can be made for reasons shown in the preceding footnotes.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dis- con- tinued em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ployed.	Conse- quent average earnings per em- ployed.
				Total.	Aver- age.	Total.	Aver- age.		
Rollers	313	\$2.34	1	279	279	\$632	\$632	0.00	\$700
	313	2.30	1	280	280	1,010	1,010	0.02	1,004
	313	(a)	4	(a)	(a)	6,780	1,697	(a)	(a)
Total	313	(b)	6	(b)	(b)	6,431	1,603	(b)	(b)
Rollers and crews	313	(a)	60	(a)	(a)	72,781	1,200	(a)	(a)
Roughers	313	(a)	2	(a)	(a)	1,221	611	(a)	(a)
Scrap boys	313	.00	2	304	152	173	87	0.07	173
	313	.73	1	11	11	8	8	0.01	228
	313	.05	1	290	290	237	237	0.03	236
	313	.05	10	1,779	178	1,000	100	1.00	297
Total	313	.00	14	2,384	170	2,106	151	7.02	277
Shearman and shearman's helpers	313	(a)	12	(a)	(a)	2,200	600	(a)	(a)
Sheet shearman	313	1.30	2	400	200	673	337	1.03	400
Shinglers	313	(a)	2	(a)	(a)	2,300	1,150	(a)	(a)
Shinglers	313	(a)	2	(a)	(a)	702	351	(a)	(a)
Stockers	313	1.30	14	2,387	169	2,570	183	7.52	674
	313	1.00	1	213	213	307	307	1.00	307
Total	313	1.30	15	2,600	173	4,977	332	8.53	673
Storekeeper	313	1.45	1	305	305	626	626	0.44	451
Sweepers	313	1.35	2	247	124	736	368	1.13	612
	313	1.35	1	106	106	400	400	0.26	612
	313	1.35	1	113	113	600	600	1.20	612
Total	313	1.00	4	1,164	126	1,736	606	1.00	612
Teamsters	313	1.35	3	113	38	400	400	1.13	612
	313	1.35	0	113	38	400	400	1.13	612
	313	1.35	0	113	38	400	400	1.13	612
Total	313	1.42	13	730	57	1,117	86	2.53	612
Timekeeper	313	2.30	1	113	113	600	600	1.47	612
Warehousemen	313	1.45	4	113	28	1,117	1,117	0.12	612
	313	1.45	0	113	28	1,117	1,117	0.12	612
Total	313	1.45	4	113	28	1,117	1,117	0.12	612
Watchmen	313	1.35	0	113	28	1,117	1,117	1.13	612
	313	1.35	0	113	28	1,117	1,117	1.13	612
	313	1.35	0	113	28	1,117	1,117	1.13	612
	313	1.35	0	113	28	1,117	1,117	1.13	612
Total	313	1.07	4	113	28	1,117	1,117	1.13	612
Watchmen	313	.00	1	113	113	600	600	1.13	612
Watchmen	313	1.30	2	113	57	1,117	1,117	1.13	612
	313	1.30	1	113	57	1,117	1,117	1.13	612
Total	313	1.07	3	113	57	1,117	1,117	1.13	612
The establishment		(b)	(b)	(b)	(b)	22,177	(b)	(b)	(b)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No data can be given for reasons shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.
				Total.	Average.	Total.	Average.	
Achmen	313	\$1.23	2	14	7	\$18	80	0.04
Achmen and fireman	313	1.34	1	9	9	12	12	0.03
Blacksmiths	313	2.50	1	256	356	841	811	0.82
	313	2.70	1	294	294	793	798	0.94
	313	1.25	2	302	101	804	328	0.97
Total	313	2.84	5	368	171	2,418	484	2.73
Blacksmiths helpers	313	1.50	2	565	283	841	434	1.81
Boiler-maker	313	2.25	1	8	8	12	16	0.03
Bolt cutter	313	1.60	1	313	313	500	500	1.00
Buggymen	313	1.55	1	205	205	320	320	0.05
	313	2.05	2	356	178	731	366	1.14
Total	313	1.87	3	561	187	1,051	360	1.79
Bundle and shippers	313	1.25	5	1,256	251	1,500	314	4.01
Call boy	313	1.37	1	278	278	380	380	0.88
Carpenter	313	2.50	1	303	303	750	750	754
Catchers	313	1.40	4	530	133	806	202	1.73
	313	1.65	2	237	119	391	196	0.78
	313	2.19	2	491	246	1,078	538	1.57
Total	313	1.79	8	1,367	156	2,273	284	4.06
Catcher and drag-out	313	1.40	1	161	161	230	230	0.51
Catcher and drawer back	313	1.30	1	80	80	109	109	0.28
Catcher and hooker	313	1.36	1	206	206	251	251	0.60
Catchers and laborers	313	1.46	2	403	202	580	294	1.29
Catchers and roughers	313	1.90	2	318	159	604	302	1.02
	313	2.32	1	141	141	320	320	0.45
	313	2.53	1	252	252	630	630	0.81
Total	313	2.21	4	711	178	1,571	393	602
Chargers	313	1.45	8	648	81	930	117	2.07
Chargers and laborers	313	1.37	4	713	53	293	73	0.60
Cleaner, office	313	.57	1	313	313	180	180	1.00
Cranemen	313	1.50	2	337	161	302	351	1.04
	313	2.00	1	294	294	679	679	0.84
Total	313	2.22	3	631	207	1,381	480	1.86
Craneman and laborer	313	1.60	1	68	68	106	106	0.22
Drawer back	313	1.30	1	253	253	345	345	0.81
Drawer back and scraper	313	1.10	1	237	237	275	275	0.78
Drill grinder	313	1.83	1	12	12	23	23	0.04
Drill grinder's helper	313	1.18	1	11	11	13	13	0.04
Engineers, locomotive	313	1.00	1	24	24	47	47	0.08
	313	2.15	1	297	297	617	617	0.92
Total	313	2.13	2	311	156	664	323	608
Engineers, machine shop	313	1.76	2	312	156	551	276	1.00
Engineers, rolls	313	1.91	4	1,218	305	2,334	584	2.80
	313	2.25	2	684	342	770	770	2.19
Total	313	2.09	6	1,902	317	3,173	648	0.08

TABLE XE.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Difference from employment.	Days of work done.		Earnings.	Necessary employes.	Consequent average earnings per employe.
				Total.	Average.	Total.		
Engineer and laborer	313	\$1.453	1	11	11	\$16	\$16	0.06
Firemen	313	1.85	4	428	180	1,080	285	2.04
	313	1.90	3	1,912	328	1,925	642	3.34
Total	313	1.904	7	1,951	236	2,044	428	5.28
Firemen and laborer	313	1.514	1	29	29	44	44	0.09
Foremen, laborers	313	1.50	1	179	179	269	269	1.50
	313	1.604	2	208	154	800	250	1.60
Total	313	1.58	3	487	162	709	256	1.83
Foremen, mill	313	6.234	1	313	313	1,920	1,920	1.00
	313	7.004	1	313	313	2,508	2,508	1.00
Total	313	7.08	3	626	313	4,428	2,210	1.00
Foremen, shear room	313	4.25	1	308	308	1,300	1,300	0.96
Cutmen	313	1.00	3	691	230	697	233	2.21
Heaters	313	2.304	1	271	271	917	917	0.87
	313	2.754	1	229	229	867	867	0.72
	313	4.00	2	2	2	8	8	0.01
	313	4.304	1	178	178	745	745	0.35
	313	4.50	1	177	177	811	811	0.57
	313	4.774	4	641	641	3,061	3,061	2.05
	313	4.984	1	203	203	1,012	1,012	0.65
Total	313	4.874	10	1,604	1,604	7,421	742	5.43
Heaters' helpers	313	1.724	4	355	86	612	183	1.12
	313	1.904	2	429	215	654	428	1.37
	313	2.15	4	844	211	1,916	454	2.70
	313	2.36	1	183	183	432	432	0.58
	313	2.91	3	536	179	1,308	330	1.71
Total	313	2.25	14	2,347	166	5,376	377	7.69
Heaters' helpers and laborers	313	1.004	2	246	123	409	205	0.79
Hookers	313	1.54	8	804	164	778	259	1.61
Hookers and straighteners	313	1.014	4	564	141	573	143	1.00
Hookers in	313	2.14	5	1,047	209	2,240	448	3.35
Hookers up	313	2.14	4	979	243	1,940	465	3.10
Keeper up and lighter up	313	2.114	1	313	313	665	665	1.00
Laborers	313	.73	9	949	105	708	79	3.03
	313	.83	3	277	76	199	63	0.73
	313	1.00	1	11	11	11	11	0.44
	313	1.25	113	7,234	63	8,008	82	23.11
	313	1.35	13	968	82	1,304	168	2.14
	313	1.40	4	389	96	347	137	1.53
	313	1.50	9	677	97	1,346	143	2.93
	313	1.624	1	23	23	41	41	0.18
	313	1.73	3	301	139	608	202	1.13
	313	1.25	2	368	181	673	437	1.23
	313	2.73	1	17	17	47	47	0.65
	313	2.08	1	317	317	807	807	1.91
Total	313	1.384	137	11,812	73	13,794	160	77.74
Laborer and mason's helper	313	1.204	1	314	314	438	438	1.30
Laborers and plate men	313	1.454	3	97	31	198	68	0.31
Laborer and straightener	313	1.13	2	31	31	35	35	0.34
Laborer and water tender	313	1.304	1	27	27	48	48	0.60

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel; UNITED STATES—Continued.

ESTABLISHMENT No. —, —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- fer- ence em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ployed.
				Total.	Aver- age.	Total.	Aver- age.	
Lathemen	313	\$1.50	1	238	238	\$432	\$173	9179
	313	1.75	1	217	217	432	432	347
Total	313	1.61½	2	535	258	864	432	543
Machinists.....	313	1.87½	1	311	311	586	586	506
	313	2.00	1	29	29	58	58	626
	313	2.25	3	61	20	128	46	708
	313	2.45	2	20	15	71	36	706
	313	2.50	2	802	301	1,504	752	782
	313	2.75	1	314	314	862	862	839
Total	313	2.39	10	1,346	125	2,210	323	749
Machinists' helpers.....	313	.50	3	229	96	151	50	164
	313	1.00	1	242	242	252	252	339
	313	1.16	1	232	232	338	338	363
Total	313	.90	5	823	165	741	146	268
Masons	313	3.25	1	44	44	112	143	1,010
	313	3.80	1	239	239	871	871	1,190
	313	4.00	1	8	8	32	32	1,232
Total	313	3.73	3	291	94	1,015	348	1,164
Masons' helper	313	1.50	1	65	65	98	98	472
Master mechanic	313	3.20	1	215	215	791	791	1,021
Patternmaker	313	2.80	1	209	209	419	419	637
Pipe fitters	313	1.75	2	28	14	80	25	558
	313	3.10½	1	309	309	960	960	972
Total	313	2.90½	3	337	112	1,010	387	938
Platemn	313	1.63	29	3,154	121	5,191	200	515
Plateman and straightener	313	1.18	1	50	50	59	59	399
Policemen	313	1.50	7	1,085	153	1,026	232	460
Porter	313	1.42	1	356	356	527	527	463
Pullers-out	313	1.43	0	1,123	125	1,603	176	447
Pullers-out and rougher	313	1.77	1	153	153	271	271	554
Pumpmen	313	1.67½	2	8	4	13	7	509
Rigger	313	1.06½	1	66	66	112	112	331
Roll turners	313	2.50	1	281	281	702	702	782
	313	3.80	1	5	5	13	13	814
	313	4.00	1	296	296	1,106	1,106	1,232
Total	313	3.20½	3	583	195	1,911	637	1,023
Rollers	313	4.29½	1	197	197	646	646	1,244
	313	5.00	1	142	142	713	713	1,501
	313	5.15	1	336	336	1,730	1,730	1,615
	313	6.25½	1	214	244	1,826	1,526	1,954
	313	6.75	3	266	193	1,790	835	2,114
Total	313	5.57½	6	1,185	196	6,005	1,101	1,743
Rollers' helpers.....	313	2.89½	3	511	256	1,480	740	807
Roughers	313	2.14½	2	371	156	783	298	671
	313	2.00	4	802	201	2,349	587	917
Total	313	2.68	6	1,173	196	3,144	324	839

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

O.—Mixed Iron and Steel: UNITED STATES—Concluded.

ESTABLISHMENT No. — —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ployee.
				Total.	Aver- age.	Total.	Aver- age.	
Roughers-down.....	313	\$2.35	3	484	232	\$1,234	\$662	1.43
Roughers-up.....	313	1.48	2	333	253	1,254	827	1.81
Scraper.....	313	.90	1	118	118	117	117	0.24
Shearmen.....	313	1.37	7	673	96	923	132	2.15
	313	1.66	1	204	204	306	306	0.85
	313	1.78	1	199	199	348	348	0.64
Total.....	313	1.46	9	1,076	120	1,576	175	2.44
Shippers.....	313	1.90	1	15	15	27	27	0.05
	313	2.11	1	312	312	659	659	1.00
	313	2.91	1	309	309	900	900	0.99
Total.....	313	2.48	3	636	212	1,686	529	2.04
Stampers.....	313	.87	2	297	148	200	100	0.96
Stockmen.....	313	1.25	1	243	243	304	304	0.78
	313	1.66	1	315	315	521	521	1.81
Total.....	313	1.46	3	558	279	825	413	1.79
Straighteners.....	313	.88	17	1,631	107	1,498	88	2.82
	313	.87	7	425	61	370	53	1.88
	313	1.00	11	865	83	370	34	1.17
	313	1.30	3	212	106	274	137	0.68
	313	1.35	2	196	98	264	132	0.63
Total.....	313	.93	39	2,019	77	2,776	71	2.66
Sweepers.....	313	.78	1	16	16	13	12	0.05
	313	1.08	2	83	42	90	45	0.27
	313	1.25	1	243	243	306	306	0.78
Total.....	313	1.19	4	342	86	408	102	1.10
Switchmen.....	313	1.63	2	296	148	490	242	0.96
Timekeepers.....	313	2.60	3	622	311	1,560	780	1.90
Water boys.....	313	1.25	4	653	213	1,067	267	2.73
Water tenders.....	313	1.43	3	638	213	1,024	245	2.64
Wheelmen.....	313	1.58	1	240	240	380	380	0.77
The establishment.....		1.93	461	58,576	127	112,447	244	187.28

P.—Mixed Iron and Steel CONTINENT OF EUROPE.

ESTABLISHMENT No. —

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Cinder loaders.....	77	\$0.51	2	156	78	\$80	\$40	2.03	\$29
	77	.76	1	64	64	49	49	0.81	50
Total.....	77	.58	3	220	73	129	43	2.88	45
Dumpers.....	77	.67	2	147	74	92	46	1.91	48
Firemen.....	77	.79	2	143	72	114	57	1.86	61
Foremen.....	77	.69	1	13	13	9	9	0.17	33
	77	.73	1	38	38	28	28	0.49	67
	77	.85	1	71	71	66	66	0.92	72
	77	1.23	3	216	72	266	89	2.81	86
	77	1.60	1	73	73	117	117	0.95	123
Total.....	77	1.18	7	411	59	460	68	5.34	81

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Different employ-ees.	Days of work done.		Earnings.		Neces-sary em-ployés.	Conse-quent average earnings per em-ployé.
				Total.	Aver-age.	Total.	Aver-age.		
Foreman, laborers	77	90.77½	1	72	72	856	856	0.94	900
Foremen, puddlers	77	.56	1	71	71	41	41	0.07	44
	77	.79	1	71	71	56	56	0.82	61
	77	1.25½	2	145	73	182	91	1.88	97
Total	77	.97	4	287	72	273	70	2.72	73
Foremen, repairers	77	1.88½	2	100	80	200	133	2.08	120
Foremen, warehouse	77	.33	1	71	71	66	66	0.02	72
	77	1.38	1	74	74	103	102	0.96	100
Total	77	1.16	2	145	73	168	84	1.86	80
Hammermen	77	1.03	3	306	68	296	70	2.66	70
Heaters	77	.66	1	66	66	42	42	0.84	50
	77	.04½	1	60	60	47	57	0.78	73
	77	1.01	1	53	53	54	54	—	70
	77	1.63½	2	83	42	140	70	1.08	120
Total	77	1.12½	5	261	53	293	59	2.39	86
Hookers-up	77	.32	3	190	66	64	21	2.58	25
	77	.77½	1	90	90	70	70	1.17	60
Total	77	.46½	4	280	72	134	34	3.75	30
Hot-bed hands	77	.63	2	91	46	38	19	1.18	32
Inspectors, plank	77	.44½	1	18	18	8	8	0.22	34
	77	.72½	1	68	68	43	40	0.88	55
Total	77	.66½	3	86	43	57	20	1.11	51
Laborers	77	.58	6	424	71	245	41	5.51	44
	77	.86½	1	68	68	55	55	0.60	62
Total	77	.81	7	492	70	300	43	6.39	47
Metal carrier	77	.21	1	60	60	21	21	0.00	23
Pilers	77	.70½	2	123	61	166	36	1.99	84
Piler, chief	77	.85½	1	73	73	71	71	0.97	73
Pilers helpers	77	.38½	1	74	74	29	29	0.98	80
Puddlers	77	1.98	11	661	56	702	64	8.45	53
Puddlers' helpers	77	.77½	5	270	65	214	43	3.58	60
	77	1.00	2	120	60	120	60	1.56	77
Total	77	.84½	7	290	67	234	46	5.14	65
Rollers	77	.56	2	75	38	42	21	0.97	43
	77	.63½	1	61	61	39	39	0.70	48
	77	.72½	2	106	53	77	39	1.38	36
	77	.91	3	223	74	203	68	2.90	70
	77	1.30½	1	64	64	89	89	0.83	107
Total	77	.88	8	520	66	450	50	6.87	66
Shearmen	77	.63½	3	240	80	192	51	3.12	49
	77	.85½	2	110	55	94	47	1.42	—
Total	77	.70½	5	350	70	246	49	4.36	54

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

F.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. — —Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Deficient employ- ee.	Days of work done.		Earnings.		Consequent average earnings per employ- ee.
				Total.	Average.	Total.	Average.	
Shannon's helper.....	77	\$6.34	1	81	81	\$19	\$19	1.00
Watchman.....	77	.58	1	84	84	49	49	1.00
Weightmen.....	77	.58	1	73	73	36	36	0.98
	77	.58	1	69	69	40	40	0.98
	77	.58	4	327	82	207	52	4.25
Total.....	77	.60	5	465	78	283	47	4.10
The establishment.....		.58	82	5,240	65	4,083	54	77.14

ESTABLISHMENT No. —

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Blacksmiths.....	312	\$6.46	21	2,152	150	\$1,453	900	10.07	\$144
	312	.63	0	1,425	228	800	148	4.55	195
Total.....	312	.81	27	4,577	170	2,241	87	14.62	160
Boiler tenders.....	312	.78	9	2,085	296	2,129	237	8.58	240
	312	.64	1	214	214	296	296	1.00	294
Total.....	312	.81	10	2,069	300	2,424	241	9.58	253
Boiler smiths.....	312	.71	2	609	305	431	210	1.05	222
	312	.57	1	170	170	98	98	0.54	100
Bundlers.....	312	.33	8	992	166	374	54	2.17	102
	312	.46	2	540	270	250	125	1.73	145
	312	.60	1	294	294	202	202	0.94	215
Total.....	312	.62	8	1,827	203	778	86	5.84	123
Carpenters.....	312	.51	7	1,025	146	821	74	3.27	150
Catchers.....	312	.42	1	25	25	17	17	0.68	150
	312	.80	9	2,277	253	2,005	222	7.27	270
	312	1.02	5	1,334	267	1,382	276	4.20	324
Total.....	312	.83	15	3,636	242	3,389	227	11.01	292
Cinder loader.....	312	.10	1	234	234	46	46	0.70	80
	312	.46	7	2,003	290	1,021	146	4.60	183
Cinder wheelers.....	312	.64	12	3,000	251	1,235	110	9.51	126
Drag-outs.....	312	.54	22	4,518	219	2,622	119	15.70	174
	312	.67	13	3,401	262	2,301	177	10.87	212
Total.....	312	.60	35	8,516	235	4,924	141	26.20	180
Driver.....	312	.34	1	129	129	73	73	0.44	100
Engineers.....	312	.70	7	2,135	305	1,671	230	4.62	245
	312	1.00	2	604	302	804	302	1.00	312
Total.....	312	.83	9	2,739	304	2,475	233	4.75	290
Engineer mechanical.....	312	3.29	1	312	312	1,025	1,025	1.00	1,025
	312	1.21	1	312	312	375	375	1.00	375
Engineer mechanical, assistant.....	312	.43	5	1,428	286	617	123	4.36	126

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- fer- ence em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ploy- ed.	Conse- quent average earnings per em- ployed.
				Total.	Aver- age.	Total.	Aver- age.		
Foreman.....	313	\$2.20	1	313	313	\$750	\$750	1.00	\$750
Foreman, laborers.....	313	.95	1	343	343	329	329	1.10	360
Foreman, masons.....	313	2.31	1	313	313	692	692	1.00	692
Foreman, puddlers.....	313	1.40	1	313	313	458	458	1.00	458
	313	1.60	1	313	313	530	530	1.00	530
Total.....	313	1.58	2	626	313	988	494	2.00	494
Foremen, rollers.....	313	1.42	1	313	313	444	444	1.00	444
	313	1.81	1	313	313	505	505	1.00	505
	313	2.15	1	313	313	653	653	1.00	653
Total.....	313	1.80	3	930	313	1,093	564	1.00	564
Foreman, works.....	313	4.07	2	313	313	1,374	1,376	1.00	1,270
Foreman, works, assistant.....	313	1.82	1	313	313	571	571	1.00	671
Grinder.....	313	.72	1	374	374	199	199	0.66	237
Hammer tenders.....	313	.65	6	1,840	307	1,573	263	1.00	268
Hammer-smiths.....	313	.34	1	252	252	86	86	0.81	107
	313	.80	2	40	122	358	118	1.28	278
	313	1.17	7	1,538	218	1,791	250	4.58	367
Total.....	313	1.02	11	2,180	196	2,230	203	0.67	320
Heaters.....	313	.71	20	5,800	223	4,137	189	18.53	223
	313	.89	5	1,140	228	1,012	202	3.64	278
	313	1.14	22	5,368	244	3,114	278	17.15	356
Total.....	313	.91	53	12,308	233	11,258	212	30.33	286
Heaters' helpers.....	313	.42	8	1,940	243	816	101	0.30	181
Helpers.....	313	.35	103	13,460	131	4,788	46	43.84	112
Hookers.....	313	.40	7	1,528	218	758	108	4.80	183
	313	.60	8	2,078	206	1,438	180	6.64	218
	313	.80	1	379	279	256	256	0.69	287
Total.....	313	.63	16	3,896	243	2,450	153	12.41	197
Hoistler.....	313	.40	1	347	347	130	130	1.11	128
Iron breakers.....	313	.34	1	67	67	28	23	0.31	107
	313	.60	1	71	71	42	42	0.23	180
Total.....	313	.48	2	128	68	68	33	0.44	160
Iron loaders.....	313	.85	21	5,767	274	2,192	182	16.36	174
Iron wheelers.....	313	.42	10	1,501	150	640	64	4.80	123
	313	.62	3	318	64	197	39	1.02	194
Total.....	313	.46	18	1,819	121	837	56	5.82	144
Joiners.....	313	.50	1	310	310	174	174	0.80	170
	313	.63	1	322	322	200	200	1.03	261
Total.....	313	.70	2	632	316	443	222	2.03	319
Laborers.....	313	.20	51	8,065	170	2,373	43	27.00	83
	313	.47	29	2,303	82	1,063	38	7.36	147
	313	.60	1	61	61	42	42	0.19	216
Total.....	313	.31	80	11,029	120	2,400	43	86	86

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. ————Continued.

Occupation.	Working days in the period.	Actual duty hours, or rate amount to average daily earnings.	Actual condition for period.				Condition if workers had continuous employment.	
			Theoretical employ- ment.	Days of work done.		Earnings.		Kata- rary em- ploy- ment.
				Total.	Average.	Total.	Average.	
Laborer and packer.....	313	96.60	1	304	304	\$120	\$120	6.00
Locomotive.....	313	.80	11	1,304	144	946	86	1.00
	313	.80	1	330	330	316	310	1.00
Total.....	313	.60	12	1,333	109	1,361	106	6.10
Mason.....	313	.20	9	2,130	230	1,130	130	6.00
Mason's helpers.....	313	.30	13	2,400	222	637	51	2.25
Mason's.....	313	.60	1	332	332	301	301	1.00
Overseers.....	313	.30	2	473	237	354	127	1.51
Painters.....	313	.50	11	302	28	153	17	1.36
	313	.70	92	12,106	130	9,133	145	20.30
	313	.51	44	10,130	230	8,335	187	22.30
	313	.80	23	8,023	345	4,867	211	17.97
	313	.50	6	1,440	240	1,351	225	4.00
	313	.30	11	2,500	222	2,525	230	2.16
	313	1.10	80	11,560	231	12,700	274	30.32
	313	1.30	3	1,273	254	1,700	362	4.00
Total.....	313	.20	213	45,130	212	41,000	190	144.27
Pumpmen.....	313	.60	3	1,207	233	605	117	4.00
Rollers.....	313	.51	10	2,335	234	1,191	119	7.00
	313	.77	15	3,325	235	2,710	181	11.30
Total.....	313	.60	25	5,000	234	3,000	190	10.72
Roughers.....	313	.52	2	500	250	300	145	1.70
	313	.60	4	800	240	645	230	2.10
	313	1.12	6	1,000	250	1,001	317	5.42
	313	1.30	3	617	272	1,083	364	2.62
Total.....	313	1.00	15	4,971	271	4,229	302	13.00
Sawyers.....	313	.60	3	900	302	500	160	2.00
Shoemen.....	313	.60	10	2,400	182	1,000	80	11.07
	313	.30	3	400	200	517	172	2.84
Total.....	313	.51	23	4,254	180	2,216	101	13.91
Shovel loaders.....	313	.30	9	1,305	312	305	41	6.00
Shovel wheelers.....	313	.60	4	1,054	264	460	215	2.37
Turners.....	313	.72	5	800	170	647	129	2.00
	313	.51	1	300	300	200	200	0.30
Total.....	313	.77	8	1,202	200	803	156	2.54
Watchmen.....	313	.32	4	1,140	285	300	75	1.44
Weighmen.....	313	.64	13	2,217	171	1,421	109	7.00
The establishment.....		.71	523	100,240	234	110,612	145	540.79

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. —.

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.						Condition if workmen had continuous employment.	
			Dif. between em- ploy-ée.	Days of work done.		Earnings.		Necessary em- ploy-ée.	Conse- quent average earnings per em- ploy-ée.	
				Total.	Aver- age.	Total.	Aver- age.			
Blacksmith	92	\$1.19	1	92	92	\$109	\$109	1.00	\$109	
Boiler cleaners	92	.39	1	92	92	36	39	1.00	36	
	92	.75	1	100	100	80	80	1.15	80	
Total	92	.55	2	199	99	109	66	2.15	51	
Bundle carriers	92	.14	7	222	23	21	5	2.41	12	
	92	.33	1	4	4	1	1	8.04	23	
	92	.47	10	447	45	212	21	4.86	44	
	92	.62	2	123	51	80	37	1.66	48	
	92	.54	3	82	17	28	9	0.57	50	
Total	92	.40	24	878	37	253	15	8.54	27	
Bundle carrier and heaters' helper	92	■	1	82	23	29	29	0.57	51	
Carpenter	92	.68	1	82	92	62	62	1.00	62	
Catchers	92	.28	5	246	69	209	40	2.78	53	
	92	.63	3	199	65	122	41	2.16	57	
	92	.65	1	77	77	68	50	2.54	60	
	92	.97	2	127	63	125	42	2.03	61	
	92	.70	2	145	72	102	51	1.58	65	
	92	.74	1	66	66	47	47	0.71	87	
	92	.79	1	9	9	7	7	0.10	72	
Total	92	.62	16	1,628	54	694	41	11.18	60	
Chargers	92	.47	15	498	31	221	15	5.90	42	
	92	.49	1	22	22	49	49	0.29	43	
	92	.50	1	49	49	20	20	0.42	46	
	92	.52	10	91	9	49	6	2.89	49	
	92	.56	9	296	32	185	18	3.11	58	
	92	.62	1	68	68	39	39	0.62	57	
	92	.72	6	25	4	19	3	0.77	66	
	92	.72	2	77	39	57	29	0.84	66	
	92	.81	2	81	41	66	23	0.88	72	
	92	.83	2	18	6	15	■	■	77	
	92	1.00	1	1	1	1	■	0.01	82	
Total	92	.59	51	1,222	34	699	14	12.39	52	
Chargers and heaters	92	1.20	2	156	78	127	64	1.79	110	
Charger and heaters' helper	92	.60	1	66	56	40	40	0.63	82	
Chemist, assistant	92	.48	1	92	92	42	42	1.00	42	
Cleaner	92	.56	1	92	92	53	53	1.00	53	
Coal igniter	92	.72	1	29	39	26	26	0.42	66	
Coal suppliers	92	.46	4	175	44	84	21	1.90	44	
Cranesman	92	.26	1	82	82	21	21	0.29	74	
Cutters	92	.64	5	311	62	160	28	2.28	41	
Door boys	92	.14	28	1,198	42	169	6	12.70	12	
	92	.19	7	122	22	29	4	1.65	19	
	92	.21	1	66	66	14	14	0.71	26	
	92	.26	6	82	16	29	5	0.29	■	
	92	.31	2	15	8	5	2	0.19	31	
	■	.47	1	56	56	28	28	0.64	44	
Total	92	.17	46	1,541	25	268	6	16.75	16	
Door boy and straightener	92	.25	■	15	15	5	5	0.16	31	
Doorkeeper	92	.62	1	92	92	61	61	1.07	57	
Dumper	92	.25	■	92	92	21	21	1.09	21	

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TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dis- tinct em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.
				Total.	Aver- age.	Total.	Aver- age.	
Elevator tenders.....	02	\$0.21	1	00	00	\$19	\$19	0.20
	03	.20	3	107	56	48	14	1.23
	04	.20	2	101	51	45	23	1.75
	05	.23	3	150	50	40	16	1.63
	06	.20	1	31	31	11	11	0.34
Total.....	02	.20	10	007	00	107	17	4.20
Engineers.....	02	.20	2	120	60	90	18	1.20
	03	.40	4	170	43	53	31	1.25
	04	.40	1	92	92	45	45	1.00
	05	.30	4	303	81	185	46	3.97
	06	.30	4	168	42	00	22	1.43
	07	.54	3	262	87	142	47	2.85
	08	.07	3	302	94	138	53	2.07
	09	.05	3	123	41	100	54	1.90
Total.....	02	.51	20	1,000	73	848	37	18.06
Examines.....	02	.43	1	92	92	80	25	1.00
Fitters.....	02	.60	44	2,730	62	1,300	30	20.67
	03	.61	0	075	75	331	37	7.34
	04	.60	3	073	75	350	39	7.52
	05	.64	2	216	108	110	50	2.35
	06	.50	3	196	65	110	55	2.15
	07	.50	1	86	86	53	53	0.96
	08	.06	1	100	100	71	71	1.13
Total.....	02	.60	60	4,000	60	2,333	24	60.97
Finishers.....	02	.34	2	148	74	50	25	1.61
	03	.30	1	20	20	10	10	0.20
	04	.41	4	100	25	40	11	1.12
	05	.44	10	933	93	422	30	10.14
	06	.40	4	167	42	90	23	2.03
	07	.35	4	330	83	173	43	3.50
	08	.06	7	553	79	319	46	6.01
	09	.00	1	20	20	17	17	0.32
Total.....	02	.40	30	2,300	60	1,123	30	25.10
Fitters.....	02	.22	5	273	73	103	20	4.05
	03	.04	3	58	29	30	10	0.80
	04	.06	1	47	47	20	20	0.61
	05	.50	2	47	34	30	20	0.73
	06	.64	2	183	91	110	56	1.80
Total.....	02	.50	13	734	60	404	34	7.97
Foremen.....	02	.70	1	92	92	72	72	1.00
	03	.25	3	184	61	174	58	2.00
Total.....	02	.80	4	276	60	246	62	3.00
Foremen, laborers.....	02	.07	1	92	92	43	43	1.00
	03	.54	1	92	92	49	49	1.00
	04	.01	1	40	40	41	41	0.97
	05	.00	1	87	87	50	50	0.95
	06	.00	1	92	92	75	75	1.00
Total.....	02	.02	5	443	88	276	33	4.92
Foremen, transportation.....	02	1.20	2	2	2	4	4	0.02

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ- ees.	Days of work done.		Earnings.		Necessary employ- ees.
				Total.	Average.	Total.	Average.	
Hatters.....	01	\$0.77	6	11	22	\$100	\$12	671
	02	1.00	15	885	59	891	59	63
	03	1.35	10	804	80	803	80	124
	04	1.70	6	181	30	237	39	157
Total	01	1.14	35	1,787	50	2,068	59	107
Hatters' helpers.....	01	.68	21	1,424	68	662	31	59
	02	.68	8	48	16	23	11	63
	03	.73	14	537	80	617	44	68
	04	.75	8	63	14	122	41	69
	05	.77	8	186	32	144	48	71
	06	.80	1	67	67	54	54	74
	07	.87	2	74	37	64	32	80
Total	01	.79	67	2,300	31	1,088	36	65
Hookers-up.....	01	.44	1	66	66	30	30	41
	02	.45	2	66	22	26	13	42
	03	.50	11	412	37	207	19	46
	04	.53	8	76	30	41	14	48
	05	.58	15	647	43	111	25	53
	06	.62	5	314	43	191	26	56
	07	.68	2	17	9	11	6	60
	08	.74	2	23	12	17	9	68
Total	01	.56	41	1,518	37	889	30	61
Hot piers.....	01	.44	5	282	56	120	26	41
Keepers.....	01	.48	1	19	19	9	9	44
	02	.52	9	756	84	295	44	46
	03	.56	2	296	96	165	85	54
	04	.65	8	319	100	283	68	60
Total	01	.50	16	1,370	86	773	48	53
Keepers-up.....	01	.46	13	84	7	41	3	46
Laborers.....	01	.19	2	95	48	18	9	17
	02	.24	1	45	85	21	21	23
	03	.22	1	92	92	29	29	29
	04	.26	5	306	73	141	28	34
	05	.41	21	502	24	227	11	38
	06	.43	2	158	79	69	35	40
	07	.44	2	180	89	74	37	41
	08	.46	2	133	66	61	31	43
	09	.48	4	273	68	123	23	44
	10	.50	1	72	11	36	36	46
	11	.52	2	84	42	42	22	47
	12	.60	3	88	29	53	19	55
	13	.72	2	15	4	11	4	57
	14	.79	1	92	92	72	72	72
Total	01	.42	51	2,372	45	888	19	49
Loaders.....	01	.25	1	8	8	2	2	23
	02	.41	8	880	76	247	31	25
	03	.44	67	2,485	44	953	30	42
	04	.48	9	643	71	111	34	44
	05	.56	1	8	2	1	1	44
Total	01	.45	90	2,330	26	1,612	20	42
Markers.....	01	.19	10	235	23	62	5	15
	02	.26	2	140	74	11	20	24
Total	01	.21	12	475	39	161	8	20

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

F.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. ————Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dis- tance from em- ploy- er.	Days of work done.		Earnings.		Neces- sary em- ploy- ee.
				Total.	Aver- age.	Total.	Aver- age.	
Masons.....	93	\$6.87	8	317	83	\$120	\$36	8.45
Masons' helpers.....	93	.43	5	334	67	143	28	2.53
Turners.....	93	.78	3	79	38	18	8	0.83
	93	.80	1	93	93	23	23	1.00
	93	.80	1	93	93	27	27	1.00
	93	.80	3	184	93	68	23	2.00
	93	.80	1	93	93	55	55	1.00
	93	.80	1	93	93	67	67	1.00
Total.....	93	.72	8	628	79	265	■	6.23
Repairers.....	93	.64	1	30	30	30	25	0.64
	93	.60	2	230	63	140	47	2.73
Total.....	93	.62	4	300	77	166	■	3.26
Repairers, furnace.....	93	.60	2	60	31	30	11	0.60
Rollers.....	93	.70	3	71	71	51	51	0.77
	93	.74	5	280	63	282	47	4.13
	93	.77	4	230	74	230	57	3.23
	93	.79	6	625	67	424	63	5.82
	93	.80	6	60	60	254	51	3.27
	93	.80	3	60	32	55	32	■
	93	.80	2	153	77	151	76	1.06
	93	1.10	2	155	■	■	61	1.06
Total.....	93	.60	21	1,854	63	1,627	57	21.23
Roll turners.....	■	.90	5	341	68	307	61	3.71
Roll turners' apprentice.....	■	.30	1	73	73	17	17	0.82
Shedmen.....	93	.10	18	579	33	110	■	6.20
Storekeepers.....	93	.41	2	92	92	38	38	1.00
	93	.74	3	90	90	60	60	1.00
Total.....	93	.67	3	104	92	100	33	2.00
Straitsmen.....	93	.30	4	204	51	32	33	2.23
	93	.31	3	113	38	21	21	0.79
	93	.36	4	113	38	16	16	0.54
	93	.41	10	274	49	260	26	2.63
	93	.45	11	433	41	300	28	3.23
	93	.47	11	411	38	300	30	3.34
	93	.50	3	113	43	43	11	1.23
	93	.53	3	113	38	113	11	1.13
	93	.55	4	113	38	113	11	1.13
	93	.58	1	1	1	1	1	1.13
Total.....	93	.60	3	2,113	49	1,627	11	21.23
Storekeepers and watchmen.....	93	.30	2	102	51	30	11	1.13
Watchmen.....	93	.30	1	102	51	30	11	1.13
	93	.30	1	102	51	30	11	1.13
	93	.30	1	102	51	30	11	1.13
	93	.30	1	102	51	30	11	1.13
Total.....	93	.30	3	402	51	102	11	1.13

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No.—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.
				Total.	Average.	Total.	Average.	
Weightmen	32	\$4.12	4	371	63	\$63	\$1.9	3.65
	32	.23	5	335	45	63	12	2.45
	32	.81	8	135	15	43	5	1.45
	32	.34	2	61	31	31	11	2.60
	32	.32	5	19	4	10	2	0.31
	32	.58	6	375	75	317	43	4.05
	32	.59	4	379	83	327	57	4.12
Total	32	.43	24	1,466	43	633	19	15.95
The establishment .....		.59	682	40,630	51	31,800	37	441.76

ESTABLISHMENT No. —

[No statement of cost of production for mixed iron and steel is shown in Part L.]

Ashmen	313	\$0.46	11	1,584	144	\$758	967	5.08	\$148
	313	.58	1	182	182	108	108	0.58	189
Total	313	.48	12	1,766	147	866	70	6.66	180
Ashmen and cleaners	313	.36	2	236	109	124	62	1.60	115
Ashman and fireman	313	.06	1	236	236	162	162	0.75	215
Blacksmiths	313	.52	14	3,082	261	2,080	147	12.56	166
	313	.65	1	368	368	249	249	1.22	268
Total	313	.63	15	4,315	289	2,306	154	12.78	197
Blacksmiths' helpers	313	.36	6	825	138	309	51	2.64	115
	313	.52	2	728	242	332	127	2.33	164
Total	313	.44	8	1,553	173	685	78	4.97	128
Boiler tender	313	.77	1	280	280	196	196	0.53	220
Boilersmiths	313	.06	4	1,519	380	1,006	252	4.45	207
Bottom builders	313	.48	27	6,306	234	3,090	114	20.15	183
Bundlers	313	.37	10	2,221	222	686	68	7.10	116
Carpenters	313	.64	5	1,419	284	584	177	6.17	171
Catchers	313	.84	12	3,210	276	2,900	233	16.66	265
Chargers	313	.46	2	337	168	244	122	1.72	163
Cleaners	313	.28	4	1,172	293	335	84	3.74	89
Coke wheelers	313	.54	3	828	276	440	150	2.85	170
Convertermen	313	.60	7	1,544	221	923	133	4.83	120
	313	.82	2	562	281	475	236	1.86	237
Total	313	.66	9	2,126	238	1,411	187	6.79	208
Convertermen and filler	313	.55	1	280	280	155	155	0.89	173
Cranemen	313	.56	7	1,083	155	631	90	2.46	182
Dolomite breakers	313	.48	11	2,374	207	1,097	100	7.27	131
Dolomite wheelers	313	.34	8	1,574	197	542	68	5.60	166
Drag-onto	313	.35	21	4,350	206	2,417	115	11.11	174
	313	.67	2	617	309	417	208	1.97	212
	313	.72	1	307	307	223	223	0.90	227
Total	313	.50	34	5,263	220	2,097	127	16.43	181
Engineers	313	.63	6	1,696	283	1,372	213	5.36	180
Engineer, blowing	313	.09	1	261	261	260	250	1.15	217
Engineer, crane	313	.54	1	118	118	64	64	0.80	170

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

F.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. from average employ-ee.	Days of work done.		Earnings.		Necessary average employ-ee.
				Total.	Average.	Total.	Average.	
Engineers, locomotive	313	96.81	4	1,299	300	9733	\$133	3.83
Engineers, pump	313	.075	2	528	264	132	132	1.09
Engineers, stamping	313	.07	1	268	268	128	128	0.86
Engineers, ventilator	313	.05	2	714	357	396	198	2.25
Engineers, winding	313	.03	1	264	264	94	94	1.11
Fillers	313	.04	12	2,405	200	1,314	110	7.06
Finishers	313	.04	12	2,005	217	1,106	90	8.22
313	.00	26	11,438	301	6,896	180	36.54	180
313	.70	2	670	290	667	223	2.78	260
Total	313	.00	53	14,913	281	8,709	184	67.84
Finishers' helper	313	.00	1	781	181	48	48	0.68
Firemen, boiler	313	.00	27	6,150	228	3,901	111	19.65
Foreman, bottom builders	313	.76	2	488	244	301	181	1.56
Foreman, carpenters	313	.07	1	574	574	326	326	1.19
Foreman, converters	313	.00	1	296	296	142	142	0.83
Foreman, fillers	313	.00	1	176	176	99	99	0.56
Foreman, laborers	313	.71	2	696	350	486	243	1.22
Foreman, locksmiths	313	.00	1	329	329	293	293	1.06
Foreman, machinists	313	.70	1	302	302	231	231	0.96
Foreman, masons	313	.07	1	141	141	94	94	0.65
Foreman, plate cutters	313	.00	4	1,308	327	1,035	264	4.18
Foreman, transportation	313	.00	1	41	41	25	25	0.13
Founder	313	1.00	1	322	322	350	350	1.00
Grassers	313	.00	9	1,472	158	517	57	4.84
Gutterman	313	.04	1	308	308	166	166	0.98
Hammer lifter	313	.00	1	302	302	150	150	0.96
Hammer tender	313	.00	1	350	350	163	163	1.16
Hammerman	313	.00	2	727	364	411	206	2.32
Hatters	313	.04	60	12,712	212	6,859	114	40.61
313	.70	4	1,130	283	790	180	3.61	175
Total	313	.05	64	13,842	216	7,649	119	44.22
Hookers	313	.03	28	8,513	250	5,915	156	30.30
313	.75	2	476	238	308	180	1.52	237
Total	313	.03	40	9,989	250	6,223	157	31.81
Hooker and rollers' helper	313	.00	1	209	209	130	130	0.67
Ingot loaders	313	.00	24	3,957	162	1,818	70	12.04
Ingot wheeler	313	.07	1	167	167	79	79	0.53
Iron loaders	313	.00	0	1,202	200	664	111	3.84
Iron wheelers	313	.04	8	1,124	225	611	122	8.30
Joiner	313	.00	1	378	378	236	236	1.21
Laborers	313	.23	11	2,954	269	687	62	9.44
313	.00	41	7,496	183	2,681	65	23.95	112
313	.00	19	2,538	256	1,266	129	6.11	168
Total	313	.26	62	12,968	269	4,633	75	41.50
Levermen	313	.04	6	1,713	286	927	155	5.48
313	.04	2	608	330	424	212	2.11	201
Total	313	.07	8	2,375	297	1,251	169	7.59
Lime wheelers	313	.05	6	1,162	232	643	128	8.71
Loaders	313	.00	12	2,778	232	1,434	120	8.98
Locksmiths	313	.07	17	5,100	305	2,988	170	10.50
Machinists	313	.00	10	2,413	241	1,495	150	7.71
Masons	313	.00	16	2,570	236	1,850	123	11.41
Masons' helpers	313	.00	12	2,288	178	474	86	9.21

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. — —Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Different employ- ees.	Days of work done.		Earnings.		Necessary em- ployees.	Conse- quent average earnings per employe.
				Total.	Average.	Total.	Average.		
Melters.....	312	\$1.11	3	853	284	8045	\$256	2.73	\$347
Messenger.....	312	.17	1	304	304	88	88	0.97	55
Mixers.....	312	.48	6	1,790	298	832	147	5.74	164
Moulders.....	312	.48	3	1,033	207	823	193	5.23	189
	312	.66	27	6,032	223	2,909	147	19.27	206
	312	.80	10	2,483	248	2,368	237	7.67	308
Total.....	312	.71	45	10,067	224	7,156	186	21.22	223
Fig iron panners.....	312	■	3	2,206	276	1,390	174	7.04	197
	312	1.07	1	310	310	232	232	0.99	323
Total.....	312	.64	3	2,516	279	1,722	191	8.03	214
Plate draughtsmen.....	312	.78	3	1,062	354	831	277	■	248
Plate heaters.....	312	.69	2	631	315	423	214	1.99	216
Plate repairers.....	312	.52	5	1,095	219	911	182	5.42	168
Plate sorter.....	312	.66	1	321	321	218	218	1.06	306
Roll table tenders.....	312	.48	3	1,318	190	735	83	4.84	123
Rollers.....	312	.72	2	547	274	394	197	4.75	225
	312	1.12	1	306	306	■	403	1.13	355
Total.....	312	.84	3	802	301	797	266	2.88	277
Rollers' helpers.....	312	.60	3	922	307	551	184	2.96	167
Roughers.....	312	.90	12	2,509	274	2,322	246	11.49	284
	312	1.07	6	1,731	288	1,850	306	5.53	336
Total.....	312	.94	19	5,239	379	3,093	287	14.93	300
Roughers' helper.....	312	.54	1	326	326	176	176	1.04	169
Saddler.....	312	.91	1	90	90	62	62	0.29	290
Sample boys.....	312	.28	4	839	210	301	75	2.48	312
Sawyers.....	312	.68	2	767	384	421	211	2.24	118
Screw cutters.....	312	.48	1	325	325	157	157	1.04	251
	312	.89	2	486	243	364	182	1.46	226
Total.....	312	.67	3	790	260	621	174	2.49	246
Shear boys.....	312	.36	4	791	198	294	71	2.53	112
Shearman.....	312	.54	10	2,431	243	1,312	131	7.77	186
Shearman's helpers.....	312	.32	24	4,774	199	2,499	104	18.25	164
Slag wheeler.....	312	.52	1	281	281	147	147	0.90	184
Slagmen.....	312	.56	10	1,901	190	1,059	106	8.07	174
Stoppermaker.....	312	.67	1	316	316	214	214	1.01	212
Stoppermaker's helper.....	312	.49	1	280	280	188	188	0.69	164
Sweepers.....	312	.47	3	419	140	199	66	1.34	249
Switchmen.....	312	.38	2	487	244	178	89	1.56	112
Transportmen.....	312	.43	■	6,135	161	2,851	79	19.60	126
	312	.58	1	276	276	164	164	0.58	189
Total.....	312	.44	39	6,411	164	2,815	72	26.48	127
Turners.....	312	.66	4	1,003	251	681	166	2.20	296
Turners' helpers.....	312	.24	6	1,647	274	826	66	4.94	296
	312	.47	4	861	215	467	192	2.78	163
Total.....	312	.36	10	2,490	241	933	62	■	123

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Diff. percent employment.	Days of work done.		Earnings.		Necessary employment.	Consequent average earnings per employe.
				Total.	Average.	Total.	Average.		
Engineers, locomotive	313	\$0.51	4	1,300	309	\$723	\$153	3.23	\$191
Engineers, pump	313	.57	3	528	264	304	132	1.99	180
Engineers, stamping	313	.47	1	208	208	128	128	0.98	140
Engineers, ventilator	313	.46	3	714	357	395	196	2.28	173
Engineers, winding	313	.38	1	384	264	94	94	0.94	111
Fillers	313	.54	12	2,405	200	1,314	110	7.89	171
Finishers	313	.45	12	2,005	317	1,106	90	3.23	143
	313	.80	28	11,438	301	6,858	130	36.54	191
	313	.75	3	870	290	687	232	2.78	246
Total	313	.55	53	14,913	331	8,708	164	47.04	183
Finishers' helper	313	.20	1	181	181	48	48	0.48	83
Firemen, boiler	313	.48	37	6,150	238	2,091	111	12.45	152
Foreman, bottom builders	313	.74	3	488	244	301	181	1.58	232
Foreman, carpenters	313	.87	1	374	374	222	222	1.10	273
Foreman, converters	313	.33	1	398	200	142	142	0.85	167
Foreman, fillers	313	.56	1	175	175	99	99	0.58	177
Foreman, laborers	313	.71	3	698	250	498	249	2.23	228
Foreman, locksmiths	313	.80	1	329	329	283	283	1.06	360
Foreman, machinists	313	.75	1	302	302	231	231	0.96	230
Foreman, masons	313	.67	1	141	141	84	84	0.45	209
Foreman, plate cutters	313	.60	4	1,308	337	1,033	284	4.18	251
Foreman, transportation	313	.80	1	41	41	25	25	0.13	191
Founder	313	1.02	1	322	322	330	330	1.03	330
Grunners	313	.20	9	1,422	158	517	57	4.84	114
Gutterman	313	.54	1	303	303	168	168	0.68	160
Hammer lifter	313	.50	1	302	302	180	180	0.60	156
Hammer tender	313	.45	1	356	356	183	183	1.14	143
Hammermiths	313	.36	3	727	384	411	396	2.32	177
Heaters	313	.64	60	12,712	212	6,830	114	46.61	168
	313	.70	4	1,120	283	798	190	3.61	220
Total	313	.63	64	13,842	216	7,635	119	44.23	173
Hookers	313	.83	33	9,512	250	5,915	156	30.39	195
	313	.75	3	476	239	360	180	1.32	237
Total	313	.83	40	9,989	250	6,275	137	31.91	197
Hooker and rollers' helper	313	.63	1	309	309	130	130	0.67	196
Ingot loaders	313	.48	29	3,957	152	1,818	70	12.66	144
Ingot wheeler	313	.47	1	167	167	79	79	0.59	148
Iron loaders	313	.56	6	1,202	200	694	111	3.44	173
Iron wheelers	313	.54	5	1,124	225	611	123	3.59	170
Joiner	313	.62	1	373	373	230	230	1.21	196
Laborers	313	.23	11	2,954	269	687	62	9.44	73
	313	.30	41	7,496	183	2,661	85	23.95	112
	313	.50	10	2,538	254	1,230	129	3.11	160
Total	313	.30	62	12,988	209	4,663	75	41.58	113
Levermen	313	.54	6	1,715	298	337	156	3.48	100
	313	.64	2	690	330	434	213	3.11	201
Total	313	.57	8	3,375	297	1,351	160	7.59	170
Lime wheelers	313	.53	5	1,192	232	642	128	3.71	173
Loaders	313	.61	12	2,779	232	1,434	120	6.89	103
Locksmiths	313	.87	17	5,169	306	2,998	176	16.58	180
Machinists	313	.62	11	2,413	241	1,495	160	7.71	194
Masons	313	.63	15	3,570	338	1,830	123	11.41	163
Masons' helpers	313	.20	12	2,288	178	474	36	7.31	65

TABLE XIV.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Concluded.

ESTABLISHMENT No. — — — — — Concluded.

Occupation.	Working days in the period.	Actual daily earnings or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different em- ploy- ments.	Days of work done.		Earnings.		Necessary em- ployés.
				Total.	Average.	Total.	Average.	
Foreman, repairers	93	\$1.68½	1	93	93	\$166	\$163	1.00
Heaters	79	.88½	6	877	83	871	83	4.77
	79	1.00	2	137	84	203	102	1.81
	79	2.04½	2	140	75	205	180	1.80
Total	79	1.84½	10	953	83	879	83	8.27
Hookers-up	79	.30	8	430	58	153	19	5.54
	79	.77½	6	405	68	314	53	8.13
Total	79	.53½	14	845	60	467	33	10.67
Iron breakers	79	.08½	2	146	73	100	50	1.83
Iron wheelers	79	.77	1	75	75	63	60	0.96
	79	.63	1	75	75	63	62	0.95
	79	1.01½	1	75	75	■	70	0.95
Total	79	.97	3	325	73	196	68	2.86
Machinists	79	.73½	2	132	67	96	48	1.08
	79	.97	1	80	80	60	60	1.01
	79	.98½	2	65	86	81	81	1.00
	79	1.00	1	13	13	14	14	0.16
Total	79	.89½	6	311	63	260	53	3.93
Oranmen	79	.55	2	120	65	71	36	1.63
Porter	93	.48½	1	93	93	44	44	1.00
Puddlers	79	1.04	23	970	43	1,015	44	12.25
	79	1.18	2	67	23	79	30	0.85
	79	1.32	19	972	51	1,223	40	12.30
Total	79	1.19	45	2,015	45	2,377	43	25.90
Rollers	79	1.00	7	431	63	406	67	6.46
	79	1.20½	4	286	73	345	80	3.63
	79	1.71	4	274	68	406	117	3.47
Total	79	1.29½	15	■	66	1,233	38	12.55
Straighteners	79	.68½	6	237	28	150	20	2.87
	79	.68½	2	141	71	123	60	1.79
Total	79	.76½	8	368	48	221	35	4.65
Sweepers	79	.23	3	112	57	26	13	■
Turners	79	.43½	2	90	90	39	39	1.14
	79	.62½	1	41	41	25	26	0.82
	79	.91½	1	82	92	84	84	1.16
Total	79	.66½	3	223	74	166	40	2.82
Warehouseman	92	.58	1	92	92	53	53	1.00
Water tenders	79	.68½	1	82	92	63	63	1.10
	79	.73½	1	90	90	66	66	1.18
Total	79	.71	3	186	93	131	60	■
Weighmen	79	.58	1	75	75	43	43	0.96
	79	.67½	1	71	71	48	48	0.90
Total	79	.62½	2	146	73	91	46	1.65
The establishment .....		.90	153	9,183	60	8,680	57	114.77

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. — —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate secured to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. from em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ployés.
				Total.	Aver- age.	Total.	Aver- age.	
Watchman.....	313	\$0.30½	1	308	308	\$145	\$145	1.17
Weightman.....	313	.68	2	308	308	400	308	1.90
	313	.70½	1	302	302	221	231	0.96
Total.....	313	.70½	2	905	302	640	213	2.80
Welders.....	313	.74½	8	2,811	251	1,496	187	6.42
	313	1.60	8	1,961	248	1,966	248	6.23
Total.....	313	.87	16	3,892	250	3,461	218	12.70
The establishment.....		.66½	198	198,304	213	110,340	122	627.12

ESTABLISHMENT No.

[No statement of cost of production for mixed iron and steel is shown in Part L.]

Ashman.....	79	\$0.77	2	103	52	\$79	\$40	1.30	\$91
Blacksmiths.....	79	.77	1	92	92	71	71	1.16	81
	79	.87	1	96	96	86	86	1.25	89
	79	1.10	1	90	90	109	109	1.25	87
Total.....	79	.81½	3	290	97	206	86	3.06	72
Blacksmiths' helpers.....	79	.60	1	47	47	28	28	0.50	47
	79	.77	1	18	18	12	12	0.20	50
Total.....	79	.68½	2	65	32	40	20	0.70	50
Boilerman.....	79	.87	1	89	89	77	77	1.12	86
Bundlers.....	79	.33	6	226	39	78	12	2.20	20
	79	.72	2	122	67	96	46	1.67	57
Total.....	79	.47	8	349	46	174	22	4.06	37
Carpenters.....	79	.67½	1	77	77	52	53	0.97	53
	79	.77	1	106	106	81	81	1.25	61
Total.....	79	.72	2	183	91	133	67	2.20	56
Coal wheelers.....	■	.53	2	156	78	82	43	1.07	43
Cutters.....	79	.62	6	487	61	304	38	6.14	40
	79	.66½	2	150	75	143	72	1.90	75
Total.....	79	.70	10	637	64	447	45	8.06	56
Engineers.....	79	.62½	1	117	117	73	72	1.42	60
	79	.57½	1	93	93	62	62	1.18	52
	79	.73½	1	71	71	52	52	0.90	52
Total.....	79	.64½	3	281	94	187	62	3.56	53
Foremen, mill.....	92	1.58½	1	92	92	145	145	1.00	145
	■	2.22	1	92	■	208	208	1.00	202
Total.....	92	1.60	2	184	96	■	174	2.00	174
Foremen, puddlers.....	92	1.43	1	92	92	120	120	1.00	120
	92	1.90½	1	92	92	174	174	1.00	174
Total.....	92	1.65	2	184	93	304	■	■	152

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.
				Total.	Average.	Total.	Average.	
Cleaner, office	48	90.30 ^a	1	48	48	\$18	\$18	1.00
Cleaners, road.....	48	.30 ^a	2	19	19	8	8	0.40
	48	.36 ^a	3	77	39	28	16	17
	48	.40	1	45	45	18	18	0.94
	48	.87	1	46	46	26	26	0.98
	48	.81	1	66	66	34	34	1.17
Total	48	.46	7	243	36	112	16	8.07
Coachers	48	.10	1	19	19	3	3	0.21
	48	.36 ^a	2	90	45	34	17	2.00
	48	.42 ^a	2	120	45	68	19	2.83
	48	.46 ^a	6	372	45	127	21	8.87
	48	.48 ^a	2	75	38	87	19	1.96
	48	.52 ^a	1	46	46	24	24	0.96
	48	.84 ^a	3	117	39	84	28	2.44
	48	.90	8	290	33	167	20	5.34
	48	.81	7	254	36	155	22	5.28
	48	.93	5	196	39	124	25	4.06
	48	.95	30	801	30	340	19	7.52
	48	.70 ^a	1	34	34	24	24	10.71
Total	48	.87	50	2,100	30	1,196	30	42.81
Crane-men	48	.40	1	8	8	2	2	0.10
	48	.44	9	34	4	15	2	0.71
	48	.42 ^a	2	47	24	22	11	0.96
	48	.60	1	12	12	6	6	0.25
Total	48	.46	13	90	8	45	3	2.04
Crop-end men	48	.24 ^a	1	46	46	11	11	0.90
	48	.35 ^a	2	42	21	15	8	0.88
	48	.40 ^a	2	84	33	27	14	1.30
	48	.42 ^a	1	44	44	19	19	0.92
	48	.46 ^a	3	92	31	42	14	1.92
	48	.48 ^a	2	56	48	28	28	1.90
	48	.50 ^a	1	20	20	10	10	0.48
Total	48	.42	12	405	34	171	14	8.46
Cutter	48	.44 ^a	1	45	45	31	31	0.94
Cutters and grinders	48	(a)	2	(a)	(a)	177	89	(a)
Dippers	48	.37	2	50	30	28	17	1.23
	48	.65	1	33	33	22	22	0.60
	48	.71	1	35	35	24	24	0.73
Total	48	.62	4	127	32	79	20	2.65
Dipper and weighman	48	.48 ^a	1	62	62	36	36	1.29
Doggers	48	.48 ^a	1	73	73	37	37	1.52
	48	.35	4	100	40	38	22	3.33
Total	48	.53 ^a	6	233	47	125	28	4.85
Dogger and unloader	48	.48 ^a	1	78	78	37	37	1.58
Drag-ops	48	.37	3	65	23	37	12	1.35
	48	.58 ^a	1	12	12	7	7	0.25
	48	.62	1	43	43	27	27	0.99
Total	48	.58	5	120	24	71	14	2.90

^a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

P.—Mixed Iron and Steel: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. — —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Watchman.....	313	\$0.39½	1	306	366	\$145.	\$145	1.17	\$124
Weighmen.....	313	.68	2	603	302	409	205	1.93	212
	313	.76½	1	302	302	231	231	0.96	239
Total	313	.70½	3	905	302	640	213	2.89	221
Welders	313	.74½	8	2,011	251	1,496	187	6.42	233
	313	1.00	8	1,981	248	1,985	248	6.33	314
Total	313	.87	16	2,992	250	2,481	218	12.75	278
The establishment.....	.....	.56½	842	196,304	233	110,848	132	627.12	177

ESTABLISHMENT No. —.

[No statement of cost of production for mixed iron and steel is shown in Part L.]

Ashmen	79	\$0.77	2	103	52	\$79	\$40	1.80	\$61
Blacksmiths	79	.77	1	92	92	71	71	1.16	61
	79	.87	1	99	99	86	86	1.25	69
	79	1.10	1	99	99	109	109	1.25	87
Total	79	.91½	3	290	97	266	89	3.66	72
Blacksmiths' helpers	79	.60	1	47	47	28	28	0.59	47
	79	.77	1	16	16	12	12	0.20	59
Total	79	.63½	2	63	32	40	20	0.79	50
Boilerman	79	.87	1	89	89	77	77	1.13	68
Bundlers.....	79	.33	6	236	39	78	13	2.99	26
	79	.72	2	132	67	96	48	1.67	57
Total	79	.47	8	369	46	174	22	4.66	37
Carpenters.....	79	.67½	1	77	77	52	52	0.97	53
	79	.77	1	105	105	81	81	1.33	61
Total	79	.73	2	182	91	133	67	2.30	58
Coal wheelers.....	79	.53	2	156	78	83	42	1.97	42
Cutters	79	.61	8	487	61	304	38	6.16	49
	79	.95½	2	150	75	143	72	1.90	76
Total	79	.70	10	637	64	447	45	8.06	55
Engineers	79	.62½	1	117	117	73	73	1.48	49
	79	.67½	1	93	93	62	62	1.18	53
	79	.73½	1	71	71	52	52	0.90	58
Total	79	.66½	3	281	94	187	62	3.56	53
Foremen, mill.....	92	1.58½	1	92	92	145	145	1.00	145
	92	2.22	1	92	92	203	203	1.00	203
Total	92	1.89	2	184	98	248	174	2.00	174
Foremen, puddlers.....	92	1.43	1	92	92	130	130	1.00	130
	92	1.90½	1	92	92	174	174	1.00	174
Total	92	1.65	2	184	92	304	152	2.00	152

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. — —Continued.

Occupation.	Working days in the period.	Actual daily earnings or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employment.	Days of work done.		Earnings.		Necessary employment.
				Total.	Average.	Total.	Average.	
Foreman, masons	48	\$1.09	1	48	48	\$53	\$53	1.00
Foreman, mill	48	1.11	1	48	48	56	56	1.00
Foreman, paddlers	48	.97	1	48	48	47	47	1.00
	48	1.02	1	48	48	78	78	1.00
Total	48	1.20	2	96	48	125	63	2.00
Foreman, roll back	48	1.48	1	48	48	70	70	1.00
Foreman, roll turners	48	2.84	1	48	48	136	136	1.00
Gagers	48	(a)	12		(a)	371	31	(a)
Gagers and laborers	48	.63	2	79	40	43	21	1.65
Gas tender	48	.71	1	48	48	34	34	1.00
Gaugers	48	.80	4	166	37	54	14	2.04
Greasers	48	.50	4	190	47	34	24	2.88
	48	.60	1	51	51	47	47	1.00
Total	48	.53	5	267	54	141	28	5.57
Grinder	48	(a)	1	(a)		48	48	(a)
Guillotine tenders	48	.85	1	37	37	20	20	0.77
	48	.80	1	34	34	20	20	0.71
	48	.62	4	190	50	122	31	4.12
	48	.65	1	35	35	23	23	0.75
Total	48	.60	7	305	44	185	26	4.36
Hammermen	48	.55	5	245	48	134	27	3.10
Haulers	48	.38	1	38	38	14	14	0.78
	48	.38	4	121	30	59	13	2.72
	48	.40	1	40	40	19	19	
	48	.44	1	45	45	20	20	0.94
	48	.44	1	46	46	22	22	1.00
	48	.50	1	47	47	22	22	0.98
	48	.61	2	102	51	63	32	2.12
	48	.67	2	105	53	70	33	2.19
Total	48	.50	13		48	261	22	11.71
Hatters	48	.51	1	37	37	29	29	1.19
	48	.51	2	86	43	51	26	1.79
	48	(a)	94	(a)	(a)	2,425	37	(a)
Total	48	(b)	96	(b)	(b)	2,505	39	(b)
Helper	48	.63	1	30	30	19	19	0.63
Hookers	48	.24	6	175	29	46	8	3.65
	48	.23	2	85	43	25	14	1.77
	48	.20	2	44	22	15	8	0.92
	48	.22	3	129	46	54	18	3.90
	48	.40	1	42	42	21	21	1.08
	48	.42	4	204	51	67	22	4.25
	48	.50	1	15	15	7	7	0.51
	48	.52	1	21	21	11	11	0.44
	48	.57	5	108	22	61	12	2.28
	48	.60	1	5	5	3	3	0.10
	48	.61	2	36	18	22	11	0.75
	48	.63	2	82	17	21	11	0.69
	48	.65	4	108	26	66	17	2.19
	48	.67	1	31	31	21	21	0.65
	48	.73	1	43	43	30	30	0.90
	48	.75	1	36	36	26	26	0.75
Total	48	.48	37	1,132	31	521	14	22.00

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
 b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel GREAT BRITAIN.

ESTABLISHMENT No. —.

(No statement of cost of production for mixed iron and steel is shown in Part I.)

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Differential employment.	Days of work done.		Earnings.		Necessary average earnings per employe.
				Total.	Average.	Total.	Average.	
Asmen	46	\$6.98	0	371	45	\$187	\$31	5.95
	48	.73	1	47	47	34	34	0.98
	49	.75	1	51	51	33	33	1.08
Total	46	.78	8	369	46	250	32	■ ■ ■
Rollers	46	.43	13	273	21	131	19	5.00
	48	.50	5	136	25	65	13	2.63
	49	.54	8	104	25	55	19	2.17
Total	46	.50	31	503	24	252	12	10.48
Roast cleaner	46	(a)	1	(a)	(a)	18	18	(a)
Blacksmiths	46	.71	2	88	44	63	22	1.22
	48	.73	1	57	53	38	38	1.08
	49	.81	2	96	50	81	41	2.06
	49	.85	1	70	70	80	80	1.46
Total	46	.78	6	309	52	242	46	5.48
Blacksmiths' strikers	46	.45	1	80	50	24	24	1.04
	48	.52	1	41	41	21	21	0.85
	49	.54	0	370	45	147	25	5.62
Total	46	.53	5	381	45	193	24	7.52
Bloomers	46	.75	2	108	54	81	41	2.25
	48	.77	4	151	38	116	29	3.15
	49	(a)	7	(a)	(a)	242	35	(a)
Total	46	(b)	13	(b)	(b)	439	24	(b)
Bloomer and roller	46	(a)	1	(a)	(a)	98	98	(a)
Bloomers' helpers	46	.54	1	34	34	18	18	0.71
	48	.60	1	30	30	22	22	0.81
Total	46	.66	2	78	37	41	21	1.52
Refr cleaners	46	.61	2	83	31	58	19	1.96
Bandier	46	(a)	1	(a)	(a)	180	180	(a)
Carpenters	46	.64	1	39	39	25	26	0.81
	48	.71	2	140	70	99	50	2.92
	49	.81	1	83	62	50	50	1.28
Total	46	.72	4	241	60	174	44	5.02
Chippers and filers	■ ■ ■	.55	2	90	50	54	27	2.06
	48	(a)	1	(a)	(a)	87	87	(a)
Total	46	(b)	3	(b)	(b)	111	37	(b)
Cinder wheelers	46	.18	4	124	31	23	8	2.58
	48	.46	2	84	32	30	15	1.23
	49	.52	2	134	67	70	35	2.79
Total	46	.38	8	322	60	123	18	6.70
Cleaners, mill	46	.48	1	46	46	22	22	0.98
	48	.50	3	111	37	66	19	2.21
	49	.53	1	63	63	27	27	1.08
Total	46	.50	5	209	42	■ ■ ■	21	4.36

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. — —Continued

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ée.	Days of work done.		Earnings.		Neces- sary em- ployée.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Masons' helpers	48	\$0.55	6	271	45	\$148	\$25	5.65	\$26
Messengers	48	.24½	1	48	48	12	12	1.00	12
	48	.36½	1	48	48	18	18	1.00	18
Total	48	.31½	2	86	48	30	15	2.00	15
Oilers and wheelers	48	1.77	2	87	44	154	77	1.81	85
	48	(a)	1	(a)	(a)	104	104	(a)	(a)
Pilers	48	.24½	5	232	46	57	11	4.83	12
	48	.48½	1	47	47	23	23	6.98	23
	48	.55	1	53	53	30	30	1.10	27
Total	48	.33	7	332	47	110	16	6.91	16
Pressmen	48	.28½	1	46	46	13	13	0.96	14
	48	.40½	5	187	37	75	15	2.90	19
	48	.73	1	53	53	38	38	1.10	34
Total	48	.44	7	286	41	126	18	5.96	21
Puddlers	48	(a)	57	(a)	(a)	2,377	42	(a)	(a)
Pullers-up	48	.20½	1	49	49	8	8	0.83	10
	48	.36½	5	149	30	54	11	2.16	17
	48	.38½	3	131	44	50	17	2.73	18
	48	.46½	1	49	49	23	23	1.02	23
Total	48	.36½	10	369	37	135	14	7.68	18
Punchers	48	.16	2	65	33	11	6	1.25	8
	48	.48½	8	342	43	168	21	7.12	24
	48	.55	1	45	45	24	24	0.94	26
	48	.61	4	198	50	124	31	4.13	30
	48	.71	1	52	52	37	37	1.06	34
	48	.73	2	111	56	81	41	2.31	35
	48	.85	2	97	49	88	43	2.02	43
Total	48	.58½	20	910	46	531	27	18.90	28
Raiser	48	.25	1	4	4	1	1	0.63	12
Repairer	48	.62½	1	53	53	33	33	1.10	30
Roll turners	48	.57	2	75	38	42	21	1.56	27
	48	.67	1	52	52	34	34	1.08	31
	48	.71	1	42	42	30	30	0.88	34
	48	.73	2	74	37	54	27	1.54	35
Total	48	.66	6	243	41	160	27	5.06	32
Rollers	48	.61½	1	57	57	35	35	1.19	29
	48	(a)	13	(a)	(a)	764	59	(a)	(a)
Total	48	(b)	14	(b)	(b)	799	57	(b)	(b)
Rollers' helper	48	.65	1	42	42	27	27	0.88	31
Roughers	48	(a)	25	(a)	(a)	834	33	(a)	(a)
Sand wheelers	48	.43½	2	85	43	37	19	1.77	21
Sawyers	48	.63	4	164	41	103	26	2.42	30

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. ———Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Dif. ferent em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ployee.	Conse- quent average earnings per em- ployed.
				Total.	Aver- age.	Total.	Aver- age.		
Hot-bank men	48	\$0.35	5	189	38	\$99	\$10	3.94	\$12
	48	.32	2	87	19	12	6	4.77	16
	48	.34	7	328	47	118	17	6.79	17
	48	.38	1	56	56	21	21	1.17	18
	48	.40	6	202	44	108	18	5.46	19
	48	.44	2	183	53	48	23	2.19	21
	48	.46	1	44	44	20	20	8.88	22
	48	.46	3	84	21	81	10	1.38	23
	48	.50	3	143	49	74	18	2.68	24
	48	.55	1	24	24	18	18	6.80	26
	48	.55	1	4	4	11	4	9.12	28
Total	48	.39	32	1,281	39	495	15	34.28	19
Inspector, bloom	48	.81	1	48	48	38	38	1.00	20
Inspectors, rail	48	.78	1	42	42	31	31	6.88	25
	48	1.21	1	48	48	58	58	1.00	28
Total	48	.80	2	90	45	89	45	1.88	47
Iron wheelers	48	.65	2	67	34	36	18	1.40	26
	48	.78	3	120	43	94	31	2.71	35
	48	(a)	2	(a)	(a)	87	44	(a)	(a)
Total	48	(b)	7	(b)	(b)	217	31	(b)	(b)
Laborers	48	.22	2	9	3	8	1	0.19	16
	48	.24	1	52	52	19	19	1.08	18
	48	.44	2	114	57	51	26	2.38	21
	48	.46	5	205	41	96	19	4.27	23
	48	.48	31	2,128	38	1,012	18	64.64	25
	48	.50	6	411	48	297	22	8.56	24
	48	.52	6	179	30	88	16	3.72	25
	48	.55	4	154	39	84	21	3.31	26
	48	.56	1	69	59	35	35	1.23	28
	48	.81	2	117	59	86	48	2.44	39
Total	48	.50	114	3,438	30	1,736	15	71.63	24
Laborer and rail breaker	48	(a)	1	(a)	(a)	21	21	(a)	(a)
Laborer and weighman	48	.51	1	58	58	30	30	1.21	25
Latheman	48	.56	4	188	47	103	26	3.88	27
Loaders	48	.68	5	89	18	49	10	1.85	28
	48	(a)	2	(a)	(a)	174	67	(a)	(a)
Total	48	(b)	7	(b)	(b)	223	32	(b)	(b)
Loaders and weighmen	48	.34	1	45	45	16	16	0.94	17
	48	.55	3	96	48	54	27	2.00	27
	48	.68	2	106	53	73	37	2.21	33
	48	.82	1	11	11	9	9	0.22	29
	48	.90	1	48	48	47	47	1.00	47
	48	1.02	1	48	48	49	49	1.00	49
	48	(a)	2	(a)	(a)	154	77	(a)	(a)
Total	48	(b)	10	(b)	(b)	402	40	(b)	(b)
Masons	48	.72	4	201	50	147	37	4.19	35
	48	.81	1	50	50	48	48	1.17	39
Total	48	.75	5	257	51	195	39	5.36	38

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
 b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dis- crep- ancy em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ployee.
				Total.	Aver- age.	Total.	Aver- age.	
Blacksmiths' strikers.....	156	90.61	2	460	100	9200	1120	2.06
	156	.96	1	188	188	162	162	1.24
Total	156	.824	4	648	107	9362	138	4.29
Bloomers	156	1.38	2	215	108	290	145	1.28
Bogie boys.....	156	.364	2	229	111	84	43	1.47
Bogie men	156	1.074	1	119	119	123	122	0.76
	156	1.104	2	254	118	262	181	2.27
	156	1.25	2	215	108	290	145	1.28
	156	1.44	2	216	108	210	154	1.23
	156	1.324	1	135	135	206	206	0.67
Total	156	1.27	0	1,038	115	1,329	147	6.00
Bogie men's helper	156	1.034	1	136	136	140	140	0.67
Boilermakers	156	1.064	2	410	205	436	218	2.63
Boilermen	156	1.124	0	260	100	1,070	180	0.15
Boilermiths.....	156	1.34	1	188	188	252	252	1.19
	156	1.40	1	182	182	252	252	1.17
	156	1.48	1	180	180	227	227	1.03
Total	156	1.404	2	528	176	741	247	2.39
Carpenter	156	1.26	1	149	149	188	188	0.96
Catchers.....	156	1.38	2	220	115	310	158	1.47
	156	1.684	2	270	135	414	207	1.73
	156	1.604	2	218	108	245	173	1.28
Total	156	1.504	0	714	119	1,075	179	4.58
Catchers' helpers	156	.874	1	134	134	132	132	0.67
	156	1.194	2	229	116	274	137	1.47
Total	156	1.114	3	364	121	406	137	2.34
Chargers.....	156	.37	2	279	139	240	120	1.78
	156	.804	2	297	148	206	147	1.40
Total	156	.984	4	576	144	533	123	2.68
Clippers	156	1.014	2	222	111	275	118	1.43
	156	1.084	2	274	137	262	141	1.70
Total	156	1.03	4	496	124	507	127	2.18
Cranemen.....	156	1.26	2	238	119	417	208	2.15
Cutters-down.....	156	1.114	1	121	121	182	182	0.64
	156	1.404	1	180	180	181	181	2.17
	156	1.304	1	133	133	211	211	0.65
	156	1.74	1	133	133	229	229	0.65
Total	156	1.464	4	537	123	773	127	2.37
Engine drivers	156	1.084	2	343	181	686	198	2.48
Enginemen	156	.88	2	332	161	274	137	2.06
	156	1.044	2	377	188	290	145	1.78
	156	1.17	2	251	125	294	147	1.61
Total	156	1.01	0	260	143	660	143	5.48

TABLE XII—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. —, —Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff-erence employ-ee.	Days of work done.		Earnings.		Neces-sary employ-ees.
				Total	Aver-age.	Total	Aver-age.	
Foundrymen and slag wheelers.....	156	02.00	2	330	100	\$228	\$144	2.05
Firemen, boilers.....	156	.88	2	244	178	323	162	2.22
Fireman, furnace.....	156	.88	2	300	160	266	148	1.92
Fireman, locomotive.....	156	.88	2	565	158	804	168	2.02
Fitters.....	156	1.22	1	206	206	273	273	1.22
	156	1.24	2	598	100	810	270	2.22
Total.....	156	1.25	4	803	201	1,083	271	5.14
Forkers.....	156	1.45	1	147	147	206	206	0.94
	156	1.46	4	386	97	558	140	2.47
	156	2.08	4	481	120	1,001	250	2.08
Total.....	156	1.74	9	1,014	118	1,787	186	6.46
Gas producers.....	156	1.00	2	143	72	187	79	0.92
Gasfitters.....	156	.97	1	180	180	178	178	1.15
Gasfitters' helper.....	156	.51	1	100	100	148	140	1.08
Hammermen.....	156	.97	2	216	158	308	164	2.03
Ironmen.....	156	1.78	2	172	86	208	148	1.10
	156	2.67	2	253	127	584	262	1.62
	156	4.17	2	221	111	622	462	1.42
	156	(a)	1	(a)	(a)	475	475	(a)
Total.....	156	(b)	7	(b)	(b)	2,220	317	(b)
Heaters' helpers.....	156	.48	6	646	108	314	52	4.14
Holders-up.....	156	1.00	1	117	117	196	196	0.75
	156	2.54	4	481	120	1,223	187	3.06
Total.....	156	2.37	5	688	120	1,419	284	3.83
Inspectors.....	156	1.21	2	265	133	322	161	1.70
Laborers.....	156	.81	2	355	185	450	150	2.50
	156	.85	2	125	63	166	83	0.80
	156	.97	1	207	207	262	262	1.33
Total.....	156	.85	6	687	148	758	128	5.68
Loaders.....	156	.97	2	215	108	212	106	1.28
	156	1.28	4	423	106	847	137	2.72
Total.....	156	1.13	6	640	107	750	127	4.10
Markers.....	156	1.00	1	144	144	282	282	0.92
	156	2.70	4	481	120	1,344	336	3.08
Total.....	156	2.00	5	625	125	1,627	328	4.00
Millwrights.....	156	1.81	1	148	148	194	194	0.95
	156	1.48	1	215	215	319	319	1.38
Total.....	156	1.41	2	363	182	513	257	2.33
Millwrights' laborers.....	156	.81	1	223	223	181	181	1.43
	156	.80	1	243	243	217	217	1.56
	156	.97	1	183	183	180	180	1.17
Total.....	156	.88	3	649	216	578	193	4.16

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
 b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. percent employ- ed.	Days of work done.		Earnings.		Necessary employ- ees.
				Total.	Average.	Total.	Average.	
Ore fillers.....	156	30.97 ^a	2	84	47	901	944	0.60
Ore grinder.....	156	1.30	1	179	179	232	232	1.15
Pattermakers.....	156	1.42	2	218	150	450	225	2.04
Pilers.....	156	1.33 ^a	1	125	125	167	167	0.80
	156	1.29 ^a	1	121	131	163	163	0.84
Total.....	156	1.36 ^a	2	256	128	350	175	1.64
Pinchers.....	156	.97 ^a	2	215	108	316	106	1.28
	156	1.23 ^a	3	250	117	468	156	2.34
	156	1.44	2	216	108	316	153	1.38
Total.....	156	1.26 ^a	7	780	111	908	141	5.00
Pitmen.....	156	(a)	6	(a)	(a)	625	104	(a)
Plate layer.....	156	.97 ^a	1	143	143	139	139	0.92
Plate layers' laborer.....	156	.81	1	143	143	114	114	0.22
Puddlers.....	156	.85	4	481	123	469	102	2.16
	156	1.47 ^a	4	476	119	709	176	3.05
	156	2.01	4	481	122	967	247	3.16
Total.....	156	1.44	12	1,454	122	2,009	176	2.35
Pushers.....	156	.97 ^a	2	123	66	129	64	0.85
Roll cleaners.....	156	.96 ^a	2	197	154	292	146	1.97
Rollers.....	156	1.26 ^a	2	226	113	288	144	1.47
	156	1.44 ^a	5	660	140	1,010	202	4.48
	156	1.78	5	579	116	1,031	206	3.71
	156	1.97 ^a	2	220	115	452	226	1.47
	156	2.44 ^a	1	125	125	230	230	0.87
	156	2.98 ^a	3	343	114	1,023	341	2.29
	156	3.21 ^a	1	131	131	421	421	0.84
	156	4.01	1	131	131	525	525	0.84
	156	5.26	1	118	118	622	622	0.76
	156	6.02 ^a	1	111	111	669	669	0.71
	156	8.16 ^a	1	135	135	1,102	1,102	0.87
	156	11.36 ^a	1	100	100	1,239	1,239	0.70
	156	12.76 ^a	1	106	106	1,353	1,353	0.68
Total.....	156	1.29 ^a	25	3,055	122	10,068	403	19.00
Rollers' helpers.....	156	.72 ^a	1	128	128	83	83	0.82
	156	.87	4	431	108	419	103	2.76
	156	1.16 ^a	2	215	108	238	119	1.38
	156	(a)	(b)	(c)	(a)	3,227	(b)	(a)
Total.....	156	(a)	(c)	(c)	(c)	10,037	(c)	(a)
Scrap cutters.....	156	2.03 ^a	4	481	120	51,062	251	3.06
Scrap cutters' helpers.....	156	1.02 ^a	4	340	126	554	136	3.46
Shearman.....	156	.93	2	329	165	306	153	2.11
	156	2.88	1	142	142	406	406	0.91
	156	5.43	2	258	129	1,401	701	1.65
	156	5.66 ^a	2	217	109	1,236	618	1.39
Total.....	156	3.34	7	946	125	3,349	478	3.06

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employees not given.

c No total can be made for reasons shown in the preceding footnotes.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. — —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployed.
				Total.	Aver- age.	Total.	Aver- age.		
Shinglers	156	\$1.70½	1	130	130	\$221	\$221	0.83	\$296
	156	2.37½	1	130	130	300	300	0.83	371
	156	2.78	1	130	130	350	350	0.83	431
Total	156	2.28	3	390	130	820	296	2.49	366
Slagmen	156	.79	2	254	127	200	100	1.63	123
	156	.97½	2	96	48	96	48	0.63	153
Total	156	.84	4	352	88	296	74	2.26	121
Smelters	156	(a)	18	(a)	(a)	2,497	194	(a)	(a)
Stampers	156	.97½	2	200	125	262	131	1.72	182
Sweepers	156	.93½	2	229	116	214	107	1.47	146
	156	.97½	2	215	108	210	105	1.38	153
	156	1.03½	2	270	135	280	140	1.73	160
	156	1.10½	2	215	108	238	119	1.88	173
Total	156	1.01½	8	929	116	942	118	8.96	180
Teemer	156	(a)	1	(a)	(a)	85	85	(a)	(a)
Test preparer	156	.93½	1	167	167	155	155	1.07	145
Test preparer's boy	156	.73	1	170	170	129	129	1.09	118
Tongsman	156	1.11½	1	124	124	137	137	0.79	172
Turn-overs	156	1.82½	4	489	122	892	223	3.13	285
Wash heaters	156	4.76½	2	251	126	1,196	598	1.61	743
Wash heaters' helpers	156	.48½	2	251	126	122	61	1.61	78
Wheelers	156	.93	6	705	118	654	109	4.52	145
	156	1.03½	2	313	157	325	163	2.01	162
	156	1.07½	1	144	144	155	155	0.92	168
	156	1.09½	1	124	124	136	135	0.79	170
	156	1.18½	6	911	152	1,043	174	5.84	179
	156	1.21½	4	417	104	504	126	2.67	180
Total	156	1.07½	20	2,614	131	2,816	141	16.75	166
The establishment .....	.....	(b)	(b)	(b)	(b)	66,433	(b)	(b)	(b)

ESTABLISHMENT No. —

[No statement of cost of production for mixed iron and steel is shown in Part I.]

Ashmen	53	\$0.54½	4	232	58	\$131	\$33	4.38	\$30
	53	.67	1	53	53	35	35	1.00	35
	53	.80	2	71	36	49	25	1.34	37
	53	.71	1	50	50	35	35	0.94	37
Total	53	.61½	8	406	51	250	31	7.69	83
Blacksmiths	53	.67	1	48	48	32	32	0.91	38
	53	.71	4	201	50	143	36	2.79	38
	53	.83	1	64	64	60	60	1.28	47
Total	53	.74	6	317	53	235	39	5.98	39
Blacksmiths' strikers	53	.52½	10	456	46	244	24	8.00	28
Bloomers	53	(a)	5	(a)	(a)	320	64	(a)	(a)
Blowers	53	(a)	6	(a)	(a)	414	69	(a)	(a)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
b No total can be made for reasons shown in the preceding footnotes.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. — —Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ-ees.	Days of work done.		Earnings.		Necessary average employ-ees.
				Total.	Average.	Total.	Average.	
Boiler scalers.....	53	90.61	1	66	60	336	336	1.13
	53	.63	1	51	51	32	32	0.64
Total	53	.61½	2	111	56	66	24	2.60
Bottom builders	53	(a)	4	(a)	(a)	173	44	(a)
Casting dresser.....	53	.81	1	55	53	34	24	1.64
Chargers	53	(a)	6	(a)	(a)	196	40	(a)
Checker	53	.68	1	66	56	40	40	1.06
Chillmen	53	(a)	34	(a)	(a)	1,490	44	(a)
Chippers	53	.54½	5	370	54	167	29	5.69
	53	.80	3	109	36	75	25	2.04
	53	.61	1	50	30	31	31	0.74
Total	53	.60½	9	418	46	253	28	7.59
Cinder wheelers	53	.73	2	111	56	83	41	2.11
Cleaners, rail bank	53	.50½	2	64	43	46	23	1.56
Coachers	53	■	3	151	50	90	30	2.85
	53	(a)	17	(a)	(a)	772	46	(a)
Total	53	(b)	20	(b)	(b)	862	43	(b)
Coke collectors	53	.44½	2	100	50	48	24	1.80
Cranemen	53	.34½	1	48	48	17	17	0.91
	53	.48½	10	497	44	176	18	0.28
	53	.54½	4	306	82	111	28	3.89
	53	.59	2	68	49	86	28	1.85
	53	.61	7	316	45	103	27	5.06
	53	.73	1	64	64	47	47	1.21
	53	(a)	6	(a)	(a)	260	45	(a)
Total	53	(b)	31	(b)	(b)	868	29	(b)
Crop-end men	53	.44½	6	256	43	100	18	4.73
Cupola fettlers and helpers	53	(a)	(c)	(a)	(a)	138	(c)	(a)
Cupolaman	53	.78	1	63	52	30	30	0.96
Diggers	53	.68½	7	256	37	134	19	4.63
	53	.77	8	181	46	160	36	2.43
Total	53	.80½	11	438	60	264	24	8.26
Drill filers	53	.56	3	160	53	94	31	2.02
Drillers	53	.57	11	616	56	356	32	11.82
	53	(a)	2	(a)	(a)	106	35	(a)
Total	53	(b)	14	(b)	(b)	462	32	(b)
Drillers' helpers	53	.50½	14	667	48	350	25	12.06
	53	(a)	3	(a)	(a)	91	30	(a)
Total	53	(b)	17	(b)	(b)	441	26	(b)
Engineers, blast	53	.37	2	105	53	60	30	■
	53	.61	2	129	60	97	40	2.25
Total	53	.70	4	225	56	157	36	4.24

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

c Number of employes not given.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. from average daily earnings.	Days of work done.		Earnings.	Necessary employes.	Consequent average earnings per employe.
				Total.	Average.	Total.		
Engineers, bloom	53	\$2.51	2	119	66	\$65	\$48	3.25
Engineers, condensing	53	.61	2	167	54	65	53	2.62
Engineers, crane	53	.84	2	84	47	31	16	1.77
	53	.61	1	21	21	12	13	0.46
Total	53	.80	2	115	38	45	15	2.17
Engineers, drop-and	53	.84	2	168	54	27	14	2.04
Engineers, drill	53	.80	1	51	21	7	7	0.48
	53	.61	1	2	2	1	1	0.04
	53	.67	2	110	55	62	31	2.06
Total	53	.69	4	153	33	70	18	2.62
Engineers, fan	53	.67	2	127	64	72	36	2.40
Engineers, foundry	53	.80	1	43	43	12	13	0.81
Engineers, hydraulic	53	.61	2	123	41	77	36	2.32
Engineers, lathe	53	.63	1	68	68	44	44	1.36
Engineers, press	53	.80	1	47	47	14	14	0.80
	53	.67	1	60	60	34	34	1.12
Total	53	.43	2	167	54	68	34	2.02
Engineers, pump	53	.67	2	120	60	51	41	2.24
Engineers, rail mill	53	.75	2	100	50	74	37	1.80
	53	.81	2	120	60	107	54	2.28
Total	53	.69	4	220	55	181	45	4.15
Engineers, rolls	53	.35	2	110	55	43	22	2.08
	53	.45	4	210	53	107	27	4.12
	53	.61	1	62	62	38	38	1.17
Total	53	.48	7	381	56	188	27	7.38
Engineers, saw	53	.90	1	48	48	24	24	0.91
	53	.73	2	128	64	92	46	2.42
Total	53	.66	3	176	59	116	19	2.32
Engineers, shear	53	.63	1	57	57	27	27	1.08
Engineers, shop	53	.86	1	50	50	21	21	1.11
Engineers, triangle	53	.48	1	44	44	21	21	0.83
	53	.60	1	80	80	25	25	0.84
Total	53	.49	2	94	47	46	23	1.77
Filers	53	.61	2	407	51	247	31	7.68
Fitters	53	.50	1	43	42	25	25	0.79
	53	.85	1	74	74	48	48	1.40
	53	.67	3	167	56	112	37	3.15
	53	.71	14	783	56	642	30	14.40
	53	.61	1	49	49	48	48	0.92
Total	53	.70	20	1,095	56	787	36	20.66

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. —.—Continued.

Occupation.	Work- ing days in the period	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Dif- ferent em- ploy- ée.	Days of work done.		Earnings.		Neces- sary em- ployée.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Foreman.....	53	\$1.46	1	48	48	\$70	\$70	0.91	\$77
Foreman, assistant.....	53	.81	1	48	48	39	39	0.91	43
Foreman, blacksmiths.....	53	1.17½	1	48	48	56	56	0.91	82
Foreman, drillers.....	53	1.09½	1	48	48	53	53	0.91	59
Foreman, engineers.....	53	2.84	1	48	48	136	136	0.91	150
Foreman, fitters.....	53	1.21½	1	48	48	58	58	0.91	64
Foremen, gashouse.....	53	.85	2	129	65	109	55	2.43	45
Foreman, haulers.....	53	.81	1	48	48	39	39	0.91	43
Foreman, laborers.....	53	.89	1	76	76	70	70	1.43	49
Foreman, masons.....	53	1.82½	1	48	48	88	88	0.91	97
Foremen, mill.....	53	2.03	1	48	48	97	97	0.91	107
	53	(a)	2	(a)	(a)	185	93	(a)	(a)
Total.....	53	(b)	3	(b)	(b)	282	94	(b)	(b)
Foreman, moulders.....	53	1.62	1	48	48	78	78	0.91	86
Foreman, rail bank.....	53	1.42	1	48	48	68	68	0.91	75
Foreman, roll turners.....	53	1.94½	1	48	48	93	93	0.91	103
Foremen, stokers.....	53	(a)	2	(a)	(a)	143	72	(a)	(a)
Gaggers.....	53	(a)	12	(a)	(a)	597	49	(a)	(a)
Gagger and straightener.....	53	(a)	1	(a)	(a)	97	97	(a)	(a)
Gas producers.....	53	.63	16	900	60	615	38	18.11	34
Gas reversers.....	53	.50½	2	119	60	59	30	2.25	26
Gaugers.....	53	.40½	2	81	41	33	17	1.53	22
Grinders.....	53	.24½	2	29	15	7	4	0.55	13
	53	.30½	2	95	48	29	15	1.79	16
	53	.50½	1	67	67	33	33	1.26	28
	53	(a)	6	(a)	(a)	379	63	(a)	(a)
Total.....	53	(b)	11	(b)	(b)	448	41	(b)	(b)
Haulers.....	53	.40½	1	53	53	22	22	1.00	22
	53	.46½	6	264	44	123	21	4.98	25
	53	.54½	2	108	53	56	28	1.94	29
Total.....	53	.48	9	429	47	201	22	7.92	25
Heaters.....	53	(a)	20	(a)	(a)	1,140	57	(a)	(a)
Heaters' helpers.....	53	.48½	3	145	48	71	24	2.74	26
	53	.59	1	47	47	28	28	0.80	32
	53	.67	8	330	41	220	28	6.23	35
	53	(a)	7	(a)	(a)	237	34	(a)	(a)
Total.....	53	(b)	19	(b)	(b)	556	29	(b)	(b)
Helver.....	53	.63	1	48	48	30	30	0.91	32
Hookers.....	53	.54½	2	111	56	61	31	2.00	29
	53	.59	2	103	52	61	31	1.64	31
	53	.63	2	107	54	67	34	2.02	32
Total.....	53	.59	6	321	54	189	32	6.05	31
Hot-bank men.....	53	.60	10	256	26	175	18	4.83	96
	53	(a)	10	(a)	(a)	469	47	(a)	(a)
Total.....	53	(b)	20	(b)	(b)	644	32	(b)	(b)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Continued.

ESTABLISHMENT No. —, —Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Days of work done.	Total.	Average.	Earnings.	Necessary employees.	Consequent average earnings per employee.
Laborers.....	53	30.30	1	56	56	618	1.06	614
	53	.34	2	108	54	30	2.08	19
	53	.30	1	48	48	18	0.81	39
	53	.44	6	247	41	116	4.06	34
	53	.30	29	757	27	381	14.28	27
	53	.60	12	567	47	268	8.57	30
	53	.54	18	608	47	335	11.47	30
	53	.66	11	525	48	315	10.00	31
Total.....	53	.61	8	180	38	88	3.02	33
	53	.67	8	121	40	80	2.28	36
Ladle runners.....	53	(a)	1	(a)	(a)	304	51	(a)
Loaders.....	53	.60	3	108	36	54	2.94	27
Total.....	53	(a)	(b)	(a)	(a)	280	(b)	(a)
Iron mixer.....	53	(a)	1	(a)	(a)	42	42	(a)
Masons.....	53	.68	2	143	48	90	2.70	33
53	.72	4	228	57	167	43	4.30	30
53	.77	1	55	55	43	43	1.94	49
53	.81	1	66	66	54	54	1.28	45
Total.....	53	.71	8	493	53	353	9.29	38
Masons' helpers.....	53	.34	7	400	57	220	7.56	29
Measurers.....	53	.67	3	150	75	85	2.83	30
Melters.....	53	(a)	6	(a)	(a)	271	45	(a)
Millwrights.....	53	.71	11	133	67	94	2.51	37
Moulders.....	53	.30	1	60	60	16	1.13	18
53	.40	1	53	53	23	28	0.90	25
53	.72	3	76	76	54	18	1.43	28
53	.68	1	63	63	52	52	1.19	44
53	(a)	8	(a)	(a)	333	67	(a)	(a)
Total.....	53	(c)	14	(c)	(c)	683	49	(c)
Passer.....	53	.81	1	54	54	43	1.02	42
Patternmaker.....	53	.50	1	53	53	47	1.00	47
Pitmen.....	53	(a)	13	(a)	(a)	453	35	(a)
Plate holders.....	53	.24	2	96	28	14	7	1.06
Plate layer.....	53	.50	1	41	41	24	0.77	31
Pullers-over.....	53	.57	2	90	50	56	28	1.67
Pullers-up.....	53	.34	2	88	44	32	16	1.66
53	.40	4	177	44	72	18	3.34	22
Total.....	53	.29	6	265	44	194	17	5.00
Punchers.....	53	.60	4	180	47	116	20	3.55
Roll turners.....	53	.48	2	87	34	94	17	1.20
53	.64	2	110	55	61	31	2.08	29
53	.63	1	72	72	45	45	1.36	38
53	.67	1	54	54	36	36	1.02	35
53	.60	1	64	54	37	37	1.02	36
53	1.00	2	68	48	105	53	1.81	38
Total.....	53	.70	8	453	50	318	35	8.56

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employees not given.

c No total can be made for reasons shown in the preceding footnotes.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

Q.—Mixed Iron and Steel: GREAT BRITAIN—Concluded.

ESTABLISHMENT No. — —Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Diff. ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Rollers	53	(a)	15	(a)	(a)	\$1,049	\$70	(a)	(a)
Roller holders	53	\$0.36½	4	186	47	68	17	8.51	\$10
Runner makers	53	(a)	6	(a)	(a)	198	33	(a)	(a)
Sawyers	53	.75	2	125	63	94	47	2.36	40
Scrap picker	53	.25½	1	48	48	14	14	0.91	15
Shearmen	53	.44½	1	18	18	8	8	0.34	24
	53	.85	2	74	37	63	32	1.40	45
Total	53	.77	3	92	31	71	24	1.74	41
Spare hands	53	.48	19	665	35	320	17	12.55	26
	53	.66	22	861	31	560	20	16.25	35
	53	(a)	47	(a)	(a)	1,574	33	(a)	(a)
Total	53	(b)	94	(b)	(b)	2,463	26	(b)	(b)
Stamper	53	.57	1	49	49	28	28	0.92	30
Stokers	53	.50½	68	2,585	38	1,316	19	48.77	27
	53	.69	8	475	59	287	36	8.94	32
	53	(a)	8	(a)	(a)	181	23	(a)	(a)
Total	53	(b)	84	(b)	(b)	1,784	21	(b)	(b)
Stokers	53	.60½	8	122	15	74	9	2.30	32
	53	.67	8	134	17	89	11	2.53	35
	53	.73	45	1,728	38	1,256	28	32.57	39
Total	53	.71½	61	1,982	32	1,419	23	37.40	38
Stopper setters	53	.32½	3	174	58	56	19	3.28	17
Stoppermakers	53	.54½	3	101	34	55	18	1.91	29
	53	(a)	(a)	(a)	(a)	340	(a)	(a)	(a)
Total	53	(b)	(b)	(b)	(b)	305	(b)	(b)	(b)
Straighteners	53	(a)	12	(a)	(a)	727	61	(a)	(a)
Sweepers	53	.44½	4	168	43	75	19	3.17	24
Tipper	53	(a)	1	(a)	(a)	76	76	(a)	(a)
Tongmen	53	(a)	4	(a)	(a)	198	50	(a)	(a)
Unloader	53	.77	1	24	24	18	18	0.45	40
Vesselmen	53	(a)	18	(a)	(a)	919	51	(a)	(a)
Watchman	53	.52½	1	56	56	30	30	1.06	28
Weighmen	53	.84½	2	71	36	24	12	1.34	18
	53	.57	1	48	48	27	27	0.91	30
	53	.81	2	104	52	84	42	1.96	43
Total	53	.60½	5	223	45	135	27	4.21	29
The establishment .....	.....	(b)	(b)	(b)	(b)	30,593	(b)	(b)	(b)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for reasons shown in the preceding footnotes.

c Number of employes not given.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Bituminous Coal: UNITED STATES.

ESTABLISHMENT No. 18.

Occupation..	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dis- ferent em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ployee.	Conse- quent average earnings per em- ployee.
				Total.	Aver- age.	Total.	Aver- age.		
Blacksmith	158	\$2.00	1	158	158	\$316	\$316	1.06	\$316
Cagemen	158	1.06½	1	108	108	181	181	0.68	286
	158	1.75	2	204	162	366	178	1.29	378
Total	158	1.72	3	312	104	537	179	1.97	372
Carpenter	158	2.00	1	152	152	304	204	0.26	316
Drivers.....	158	1.25	1	50	50	62	62	6.22	196
	158	1.50	7	801	114	1,185	169	5.07	234
Total	158	1.46½	8	851	106	1,247	158	5.29	232
Dumpers	158	1.50	2	291	146	437	219	1.84	237
Engineers, hoisting	184	2.16	2	268	184	795	398	2.09	288
Fireman	184	1.50	1	171	171	259	259	0.93	279
Foreman, laborers	158	1.75	1	171	171	299	299	1.06	276
Laborers.....	158	1.50	2	287	144	431	216	1.82	297
Mine boss	184	2.28½	1	184	184	420	420	1.00	620
Miners	158	(a, b)	176	(b)	(b)	a 30, 305	172	(b)	(b)
Roadmen	158	1.50	9	1,453	161	2,164	240	9.29	235
	158	1.75	1	178	178	312	312	1.12	277
Total	158	1.52	10	1,631	163	2,476	248	10.23	249
Tracklayer	158	1.75	1	143	143	251	251	0.91	277
Trappers	158	.87½	2	305	153	267	134	1.93	138
Trimmer.....	158	1.75	1	150	150	277	277	1.01	275
Weighman	158	1.75	1	154	154	269	269	0.97	276
The establishment.....	.....	(c)	212	(c)	(c)	d 38,690	183	(c)	(c)

ESTABLISHMENT No. 26.

Blacksmith	312	\$2.40	1	202	202	\$485	\$485	0.65	\$732
Blacksmith's helper and pipe fitter.	312	1.83	1	213	213	399	399	0.68	573
Blasters	312	2.00	6	225	38	454	76	0.72	632
	312	2.10	2	134	67	279	140	0.43	652
Total	312	2.04	8	359	45	733	92	1.15	639
Blaster and driller.....	312	2.10	1	129	129	271	271	0.41	653
Blasters and loaders.....	312	1.08	4	246	62	457	122	0.79	629
Blaster and watchman.....	312	1.77	1	169	169	299	299	0.54	554
Cageman and driver.....	312	1.92½	1	163	163	314	314	0.52	661
Cagemen and loaders.....	312	1.90	2	289	145	549	273	0.92	584
Carpenter	312	1.50	1	61	61	92	92	0.19	472
Carpenter and dumper	312	1.57½	1	193	193	304	304	0.62	489
Cutters.....	312	2.25	8	901	113	2,065	261	2.28	724
	312	2.50	4	303	76	750	188	0.97	773
	312	2.75	1	8	8	22	22	0.93	861
Total	312	2.25½	13	1,212	93	2,857	229	1.86	738

a From the earnings here given miners bought their own supplies at a cost of 48 cents per week.

b Paid by the quantity. The daily rate of pay and days of work done cannot be given.

c No total can be made for the reason shown in the preceding footnote.

d In addition, \$434 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 209.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. 26—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.						Condition if workmen had continuous employment.	
			Different employment.	Days of work done.		Earnings.		Necessary employees.	Consequent average earnings per employee.	
				Total.	Average.	Total.	Average.			
Cutters and cutters' helpers ..	313	\$2.64	2	421	140	\$686	\$2.21	1.35		
Cutters' helpers	313	1.30	13	840	65	1,523	117	2.06	267	
	313	2.00	2	65	33	121	66	0.21	631	
Total	313	1.33	15	905	60	1,654	110	2.30	373	
Cutters' helper and driver	313	1.53	1	141	141	216	216	0.45	479	
Cutters' helpers and loaders ..	313		4	236	72	532	133	0.91	553	
	313	2.00	1	23	23	45	45	0.07	631	
Total	313	1.57	5	309	82	580	116	0.96	553	
Driller	313	2.00	1	0	0	12	12	0.02	631	
Drivers	313	1.75	1	19	10	23	23	0.06	379	
	313	2.00	3	149	50	795	96	0.46	620	
Total	313	1.60	5	169	42	818	80	0.54	502	
Drivers and loaders	313	1.61	2	178	89	287	154	0.56	475	
Dumper and loader	313	1.43	1	82	82	119	119	0.27	449	
Engineer, hoisting	313	1.72	1	167	167	286	286	0.33	540	
Engineer and fireman	313	1.72	1	317	317	545		1.01	326	
Fireman and watchman	313	1.43	1	301	301	428	428	0.96	445	
Laborers	313	1.00	2	65	23	66	23	0.15	312	
	313	1.25	2	110	55	137	60	0.25	290	
Total	313	1.17	4	154	29	183	46	0.50	267	
Laborer and loader	313	1.02	1	121	121	312	312	0.42	507	
Loaders (a)	313	1.73	2	121	61	316		0.30	543	
	313	1.67	65	2,576	37	4,440	68	7.50	565	
Total	313	1.86	67	2,497	37	4,694	68	7.96		
Loader and teamster	313	1.00	1	79	79	131	131	0.25	320	
Loaders and timbermen	313	1.90	4	160	42	372	63	0.34	615	
Loader and trapper	313	1.31	1	143	143	188	188	0.45	411	
Loader and watchman	313	1.00	1	26	26	44	44	0.08		
Mine bosses	313	1.91	2	373	187	717	359	1.19	802	
Pumpman	313	1.33	1	3	3	4	4	0.01	417	
Teamsters	313	1.15	1	84	84	101	101	0.27	378	
	313	1.75	1	43	43	53	63	0.14	394	
Total	313	1.71	2	127	64	154	77	0.41	399	
Timbermen	313	2.00	5	254	57	675	115	0.91	634	
	313	2.10	2	100	55	243	115	0.53	631	
Total	313	2.04	7	456	66	920	113	1.41	649	
Tracklayers	313	2.25	2	322	111	636	243	0.71	683	
Trappers	313	.80	2	273	137	316	108	0.87	244	
Trimmers	313	1.25	1	17	17	23	23	0.05	406	
	313	1.50	4	331	88	458	122	1.06	461	
Total	313	1.46	5	348	70	516	162	1.11	650	

a This being a machine mine the loaders here take the place of miners in other establishments. Loaders, as well as all inside employees, pay 25 cents per week for oil.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. 96—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployee.
				Total.	Aver- age.	Total.	Aver- age.		
Watchman.....	305	\$1.21	1	53	53	\$61	\$61	2.15	\$441
Weighmen.....	313	1.00	1	15	15	15	15	0.06	313
	313	1.72½	1	313	313	540	540	1.00	540
Total	313	1.00	2	328	161	565	278	1.05	830
The establishment.....	.....	1.81½	173	11,007	67	\$21,434	124	37.06	573

ESTABLISHMENT No. 35.

Dumper	313	\$1.50	1	50	50	\$75	\$75	0.18	\$470
Haulers	313	1.81	5	267	53	491	98	0.55	576
Haulers and tracklayers.....	313	1.87	1	235	235	440	440	0.75	583
	313	1.95½	1	94	94	184	184	0.30	613
	313	2.25	1	275	275	619	619	0.83	765
Total	313	2.36	3	604	201	1,243	414	1.53	644
Hauler and trimmer	313	1.40½	1	60	60	103	103	0.22	467
Laborers	313	1.50	3	15	5	23	8	0.05	490
Laborer and trapper.....	313	1.00	1	68	68	68	63	0.22	313
Miners	313	(b, c)	196	(c)	(c)	b 17,025	92	(c)	(c)
Tracklayer	313	2.00	1	269	269	540	540	0.86	628
Trapper	313	.40	1	44	44	19	19	0.14	135
Trimmers	313	1.00	1	47	47	47	47	0.15	313
	313	1.50	2	201	146	449	225	0.96	480
Total	313	1.46½	3	338	113	496	165	1.08	450
The establishment.....	.....	(d)	205	(d)	(d)	\$20,083	98	(d)	(d)

ESTABLISHMENT No. 96.

Blacksmiths	313	\$1.65	1	236	236	\$384	\$384	0.75	\$900
	313	2.00	2	273	138	551	276	0.88	627
Total	313	1.83	3	511	170	935	312	1.63	573
Carpenter	313	2.06½	1	6	6	16	16	6.02	855
Drivers.....	313	1.00	1	4	4	4	4	6.61	313
	313	1.25	1	19	19	23	23	6.06	379
	313	1.50	1	11	11	17	17	0.04	484
	313	2.00	13	442	37	892	74	1.41	632
	313	(c)	3	(c)	(c)	1,633	544	(c)	(c)
Total	313	(d)	18	(d)	(d)	2,569	143	(d)	(d)

a In addition \$148 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 209.
b From earnings here given miners bought their own supplies at a cost of 75 cents per week.
c Paid by the quantity. The daily rate of pay and days of work done cannot be given.
d No total can be made for the reason shown in the preceding footnote.
e In addition \$1,004 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 209.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. 96—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. from em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ploy- ee.
				Total.	Aver- age.	Total.	Aver- age.	
Driver and hooker-on.....	313	\$1.26½	1	171	171	\$316	\$216	0.56
Engineer.....	313	2.00	1	253	253	563	563	0.96
Fanmen.....	313	1.50	2	210	103	470	157	0.90
Fire boss.....	313	2.08½	1	220	220	671	671	1.02
Hookers-on.....	313	.75	2	162	52	33	41	0.32
	313	1.00	2	84	17	34	17	0.11
Total.....	313	.84½	4	127	94	116	29	0.44
Laborers, surface.....	313	1.25	3	86	18	70	23	0.18
	313	1.35	1	25	25	33	33	0.08
	313	1.50	3	29	10	43	14	0.09
	313	1.75	1	22	22	87	87	0.07
Total.....	313	1.33½	3	139	17	123	36	0.42
Laborers, underground.....	313	1.75	3	36	12	68	23	0.12
	313	2.00	3	69	8	127	15	0.23
Total.....	313	1.91½	12	107	8	205	17	0.34
Laborer and miner.....	313	(a, b)	1	(b)	(b)	a 32	32	(b)
Masons.....	313	3.00	2	8	3	18	8	0.02
Miners.....	313	(a, b)	412	(b)	(b)	a 53, 613	190	(b)
Miners and tippemen.....	313	(a, b)	2	(b)	(b)	a 633	276	(b)
Pit bosses.....	313	2.25	1	67	67	150	150	0.21
	313	2.50	2	168	189	473	473	0.61
Total.....	313	2.43½	2	235	128	623	313	0.81
Roadmen.....	313	2.00	2	518	259	1,036	518	1.65
Tippemen.....	313	1.45	3	281	35	410	51	0.90
	313	1.60	2	96	49	168	79	0.31
Total.....	313	1.50	10	879	38	568	87	1.21
Trappers.....	313	.80	15	966	66	493	33	2.16
Trimmers.....	313	1.50	2	143	34	151	50	0.33
	313	1.65	4	116	29	192	48	0.37
Total.....	313	1.58½	7	219	31	343	49	0.70
Water hauler.....	313	2.00	1	20	20	40	40	0.06
Weighmaster.....	313	2.00	1	317	317	634	634	1.01
The establishment.....		(c)	507	(c)	(c)	d 63, 948	126	(c)

a From earnings here given miners bought their own supplies at a cost of 42 cents per week.

b Paid by the quantity. The daily rate of pay and days of work done cannot be given.

c No total can be made for the reason shown in the preceding footnote.

d In addition \$4,507 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 210.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. 107.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dis- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployed.
				Total.	Aver- age.	Total.	Aver- age.		
Blacksmith	313	\$1.25	1	289	289	\$850	\$899	0.92	\$794
Blacksmith's helper	313	1.89	1	182	182	273	273	0.58	479
Carpenter	313	2.25	1	53	53	118	118	0.17	697
Carpenter's helper	313	1.50	1	55	55	82	82	0.18	467
Drivers	313	1.75	2	130	65	223	112	0.42	537
	313	1.85	2	27	14	50	25	0.09	549
	313	2.00	4	865	141	1,129	282	1.81	625
	313	2.23	1	135	135	301	301	0.43	698
Total	313	1.96½	9	857	95	1,703	189	2.75	622
Engineers	313	2.11	2	313	157	680	330	1.09	659
Fire boys	313	2.09	1	292	292	584	584	0.93	626
Hookers-on	313	1.40	1	127	127	178	178	0.41	439
	313	1.45½	1	159	159	231	231	0.51	455
Total	313	1.43	2	286	143	409	205	0.92	448
Hestler	313	1.50	1	116	116	173	173	0.37	467
Laborers	313	1.00	1	75	75	72	72	0.24	399
	313	1.25	7	133	19	166	24	0.42	391
	313	1.50	1	51	51	76	76	0.16	466
	313	2.00	3	100	33	201	67	0.82	629
Total	313	1.43½	12	359	30	515	43	1.14	449
Mine boss	313	2.68½	1	183	183	490	490	0.58	838
Miners	313	(a, b)	255	(b)	(b)	a 29,899	117	(b)	(b)
Miner and pumpman	313	(a, b)	1	(b)	(b)	a 174	174	(b)	(b)
Miner and water boy	313	(a, b)	1	(b)	(b)	a 294	294	(b)	(b)
Pit boss	313	2.50	1	130	130	325	325	0.42	783
Pumpmen	313	1.00	2	54	27	54	27	0.17	312
Roadmen	313	2.00	3	216	72	427	142	0.69	619
Tipplemen	313	.75	1	182	182	140	140	0.58	241
	313	1.00	1	102	102	102	102	0.33	313
	313	1.25	1	8	8	10	10	0.03	391
	313	1.50	7	434	62	653	93	1.30	471
	313	2.00	1	1	1	2	2	0.00	628
Total	313	1.25	11	727	66	907	82	2.33	399
Water boys	313	1.75	2	130	65	227	114	0.42	547
Weighmasters	313	2.00	1	100	100	198	198	0.52	620
	313	2.37	1	192	192	455	455	0.61	742
Total	313	2.23½	2	292	146	653	327	0.93	700
The establishment		(c)	310	(c)	(c)	d 38,617	125	(c)	(c)

a From the earnings here given miners bought their own supplies at a cost of 73.5 cents per week.

b Paid by the quantity. The daily rate of pay and days of work done cannot be given.

c No total can be made for the reason shown in the preceding footnote.

d In addition \$1,716 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 210.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. 100.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployes.	Conse- quent average earnings per em- ploye.
				Total.	Aver- age.	Total.	Aver- age.		
Blacksmiths.....	313	\$2.13	2	511	256	\$1,121	\$361	1.63	9857
Carpenters.....	313	1.92½	2	40	20	77	30	0.13	603
	313	2.00	1	15	15	37	27	■	6.0
	313	(a)	1	(a)	(a)	80	80	(a)	(a)
Total.....	313	(b)	4	(b)	(b)	174	44	(b)	(b)
Carpenter and rockmen.....	313	2.11	1	9	9	19	19	0.09	981
Drivers.....	313	1.40	1	55	55	77	77	0.18	429
	313	1.50	2	47	24	71	36	0.15	673
	313	1.72½	1	296	296	495	495	0.91	543
	313	1.80	2	35	18	63	32	6.11	851
	313	1.90	13	2,301	177	4,423	340	7.35	993
	313	2.00	10	946	95	1,901	190	2.03	623
Total.....	313	1.61½	29	3,672	127	7,096	243	11.73	599
Driver and flagman.....	313	1.03½	1	146	■	151	151	6.47	334
Drivers and miners.....	313	(a)	2	(a)	(a)	353	436	(a)	(a)
Driver and trapper.....	313	.63½	1	143	143	90	90	8.45	196
Dampers.....	313	1.25	5	223	45	278	86	6.71	393
	313	1.35	1	103	103	137	137	6.22	450
	313	1.50	3	497	249	748	274	1.50	471
Total.....	313	1.41½	9	823	103	1,164	146	2.68	643
Engineers.....	313	2.00	2	173	87	351	176	0.55	633
Farman.....	313	1.53½	1	173	173	263	263	0.56	476
Farman and weighman.....	313	1.68	3	194	194	376	326	0.62	826
Foreman.....	313	2.10	1	313	313	979	979	1.00	979
Laborers.....	313	.85	1	26	26	22	22	0.08	263
	313	.90	1	251	251	290	290	0.39	237
	313	1.00	1	90	68	70	70	0.22	323
	313	1.25	10	141	7	178	9	0.45	391
	313	1.33½	1	3	3	4	4	6.01	417
	313	1.50	8	19	3	29	5	6.06	■
	313	1.55	1	144	144	221	221	6.47	■
	313	1.70	2	18	6	32	11	6.06	■
	313	1.80	2	250	125	445	222	0.80	■
	313	2.00	10	133	13	293	36	8.43	621
	313	(a)	2	(a)	(a)	124	41	(a)	(a)
Total.....	313	(b)	48	(b)	(b)	1,625	94	(b)	(b)
Laborers and miners.....	313	(a)	6	(a)	(a)	1,349	225	(a)	(a)
Laborers and trappers.....	313	.89½	1	32	32	19	19	■	196
	313	.96½	1	181	191	165	165	0.61	276
Total.....	313	.82½	2	223	112	■	93	0.71	233
Miners.....	313	(a, c)	657	(a)	(a)	2105, 088	222	(a)	(a)
Minors and rockmen.....	313	(a)	12	(a)	(a)	1,590	133	(a)	(a)
Miner and shifter.....	313	(a)	1	(a)	(a)	944	944	(a)	(a)
Office boy.....	313	.55	1	140	140	78	78	0.45	174
Oilier.....	313	.80	1	249	249	223	223	0.80	334
Policeman.....	313	.85½	1	131	131	125	125	0.42	299
Repairers and rockmen.....	313	(a)	2	(a)	(a)	187	94	(a)	(a)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

c From the earnings here given miners paid 27.5 cents per week for oil and tool sharpening. They also furnished powder, but the cost is not known.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

R.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. 109—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Different employ- da.	Days of work done.		Earnings.		Necessary employ- da.	Consequent average earnings per employ- da.
				Total.	Average.	Total.	Average.		
Rockmen	313	\$1.75	1	4	4	87	87	0.01	\$548
	313	1.80	1	5	5	9	9	0.03	893
	313	2.00	4	90	23	180	45	0.29	628
	313	(a)	3	(a)	(a)	29	10	(a)	(a)
Total.....	313	(b)	9	(b)	(b)	225	25	(b)	(b)
Shifter.....	313	1.80	1	236	236	429	429	0.75	893
Timberman	313	2.00	1	279	279	568	568	0.80	637
Trackmen	313	1.25	1	28	28	32	32	0.08	383
	313	1.75	1	28	28	49	49	0.09	548
	313	2.00	4	27	7	55	14	0.09	638
	313	2.15	2	530	265	1,143	572	1.09	675
Total.....	313	2.00½	8	611	76	1,279	160	1.95	655
Trappers	313	.55	7	332	47	183	26	1.06	173
	313	.63	6	404	67	255	43	1.39	198
Total.....	313	.59½	13	736	57	438	34	2.35	198
Weighmen.....	313	1.75	1	20	20	35	35	0.06	548
	313	2.03	1	313	313	635	635	1.06	635
Total.....	313	2.01	2	333	167	670	335	1.06	630
The establishment.....	.....	(b)	628	(b)	(b)	c128,714	205	(b)	(b)

ESTABLISHMENT No. —.

[No statement of cost of production for this establishment is shown in Table VIII.]

Blacksmith	313	\$2.25	1	307	307	\$694	\$694	0.98	\$708
Blacksmith and miner	313	(a)	1	(a)	(a)	44	44	(a)	(a)
Blacksmiths' helper	313	1.70	1	10	10	17	17	0.03	532
Blacksmiths' helper and miner	313	(a)	1	(a)	(a)	231	231	(a)	(a)
Carpenters	313	2.00	1	10	10	20	20	0.03	626
	313	3.00	1	4	4	12	12	0.01	939
Total	313	2.28½	2	14	7	32	16	0.04	715
Drivers	313	1.85	8	1,340	168	2,484	311	4.28	590
Driver, boss	313	2.30	1	280	280	663	663	2.92	718
Drivers and miners	313	(a)	2	(a)	(a)	90	50	(a)	(a)
Dumpers	313	1.61	2	301	151	485	243	0.96	504
Engineers	313	2.00	2	25	13	49	25	0.08	613
	313	2.11½	1	278	278	588	588	0.89	662
Total	313	2.10	3	303	101	637	212	0.97	648
Grader, track	313	1.50	1	67	67	101	101	0.21	472
Greasers	313	.81½	2	230	115	187	94	0.73	254

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b No total can be made for the reason shown in the preceding footnote.

c In addition \$2,784 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 210.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.
R.—Bituminous Coal: UNITED STATES—Continued.
ESTABLISHMENT No. —.—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployee.
				Total.	Aver- age.	Total.	Aver- age.		
Laborer.....	313	\$1.30	1	10	10	813	\$13	0.03	8407
Miners.....	313	(a, b)	227	(b)	(b)	a 58,615	258	(b)	(b)
Miners and shovellers.....	313	(b)	2	(b)	(b)	606	348	(b)	(b)
Pit boss.....	313	2.87½	1	313	313	900	900	1.00	900
Pumpman	313	1.30	1	10	10	13	13	0.03	407
Pusher	313	1.10	1	205	205	225	225	0.65	344
Roadmen	313	2.00	2	336	168	672	336	1.07	636
	313	2.15½	1	45	45	97	97	0.14	675
Total	313	2.02	3	391	127	769	256	1.21	632
Shovellers	313	1.00	5	52	10	82	16	0.17	494
	313	1.63	1	106	106	178	178	0.34	526
	313	1.75	9	923	103	1,602	178	2.95	543
Total	313	1.72	15	1,081	72	1,863	124	2.46	539
Trappers	313	.60	6	329	55	198	33	1.05	183
Watchman	313	2.00	1	25	25	50	50	0.08	626
Water haulers	313	1.75	2	496	248	868	434	1.58	548
Weighmaster.....	313	2.30	1	313	313	720	720	1.00	720
The establishment.....	.....	(c)	286	(c)	(c)	70,602	247	(c)	(c)

ESTABLISHMENT No. —.

[No statement of cost of production for this establishment is shown in Table VIII.]

Blacksmiths	313	\$2.38	2	429	315	\$1,029	\$510	1.37	\$744
Cagemen	313	1.02	5	318	64	610	122	1.02	600
Carpenter	313	1.87½	1	290	290	569	569	0.93	604
Drillers	313	1.25	8	297	37	371	46	0.95	391
Driller and trapper	313	1.14	1	29	29	33	33	0.09	356
Drivers	313	1.87½	16	1,437	89	2,744	172	4.56	602
	313	2.00	23	1,199	52	2,343	102	2.33	612
Total	313	1.93½	39	2,626	67	5,067	129	2.39	606
Driver and miner.....	313	2.02	1	93	93	186	186	0.29	633
Driver and slag hauler.....	313	1.43	1	79	79	113	113	0.25	448
Dumpers	313	1.50	2	115	58	172	86	0.37	463
	313	1.62½	1	175	175	274	274	0.56	490
Total	313	1.54	3	290	97	446	149	0.93	481
Dumper, boss.....	313	2.25	1	208	208	459	459	0.86	691
Dumper and trimmer.....	313	1.75½	1	82	82	144	144	0.26	550
Engineer	313	1.50	1	187	187	280	280	0.69	469
Engineer, hoisting.....	313	2.25	1	253	253	554	554	0.81	646
Fireman	313	1.75	1	263	263	444	444	0.84	523

a No information in regard to miners' supplies.
b Paid by the quantity. The daily rate of pay and days of work done cannot be given.
c No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

R.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. —.—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ployed.	Conse- quent average earnings per em- ployed.
				Total.	Aver- age.	Total.	Aver- age.		
Laborers	313	\$1.25	16	112	7	\$140	30	0.36	\$301
	313	1.26	1	226	226	312	312	0.72	432
Total	313	1.334	17	338	20	452	27	1.06	419
Mason	313	2.334	1	8	8	7	7	0.01	730
Miners.....	313	a 1.40	1	5	5	a 7	7	0.03	436
	313	a 1.874	1	16	16	a 30	30	0.06	507
	313	a 2.06	18	952	53	a 1,950	100	2.04	644
	313	a 2.20	264	27,558	104	a 60,616	230	22.04	686
Total	313	a 2.194	264	28,531	100	a 62,612	230	21.15	507
Miners and tracklayers.....	313	2.10	2	120	60	202	126	0.30	607
Miners and trappers.....	313	1.704	2	88	44	150	75	0.28	534
Miner and water hauler	313	1.874	1	66	66	105	105	0.20	607
Pipe layer	313	2.00	1	153	153	306	306	0.40	626
Pit bosses	313	1.67	2	380	190	650	325	1.24	502
Pumpmen	313	1.124	2	467	234	525	263	1.40	606
Pumpman and trapper	313	.974	1	129	129	126	126	0.41	306
Pushers	313	1.354	2	331	166	440	235	1.00	425
Slack haulers.....	313	1.25	4	75	19	86	24	0.24	401
Slack hauler and trapper	313	.944	1	38	38	88	36	0.12	207
Slack shovellers	313	1.324	2	9	5	12	6	0.03	417
Slack shoveller and trapper ...	313	1.00	1	2	2	2	2	0.01	312
Stable boss	365	.964	1	265	265	300	300	1.00	300
Teamster	313	1.50	1	300	300	450	450	0.36	470
Tracklayers	313	1.874	3	140	47	264	88	0.45	500
	313	2.00	3	95	52	180	63	0.30	623
	313	2.124	4	267	67	676	144	0.85	675
	313	2.25	1	154	154	330	330	0.40	650
Total	313	2.064	11	656	60	1,368	124	2.09	652
Tracklayer and trapper	313	1.50	1	6	6	9	9	0.02	470
Trappers	313	.65	6	40	7	27	5	0.13	211
	313	.80	24	1,302	54	1,034	43	4.16	249
	313	.954	1	100	100	104	104	0.35	230
Total	313	.804	31	1,451	47	1,105	38	4.64	251
Trimmers.....	313	1.55	4	404	101	627	157	1.29	486
Trimmer, boss	313	1.884	1	372	272	512	512	0.87	540
Watchman	365	1.64	1	266	266	400	400	0.78	300
Water haulers.....	313	1.50	4	155	39	231	58	0.50	486
Weighmaster.....	313	2.20	1	313	313	720	720	1.00	720
The establishment.....	.....	2.03	445	40,412	91	82,058	184	128.81	637

ESTABLISHMENT No. —

[No statement of cost of production for this establishment is shown in Table VIII.]

Blacksmiths	313	\$2.15	3	488	163	\$1,068	\$253	1.56	\$679
	313	2.25	2	173	87	387	194	0.55	700
Total	313	2.184	5	661	123	1,445	280	2.11	684
Blasters	313	1.334	1	3	3	4	4	0.01	417
	313	1.50	1	18	18	27	27	0.06	470
	313	2.00	1	14	14	28	28	0.04	626
Total	313	1.604	3	35	12	59	29	0.11	528

a From earnings here given miners bought their own supplies at a cost of \$1.00 per week.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

R.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. —. —Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Different employ- ees.	Days of work done.		Earnings.		Necessary employ- ees.	Consequent average earnings per employ- ee.
				Total.	Average.	Total.	Average.		
Blasters and head cutters.....	385	(a)	2	(a)	(a)	\$100	\$35	(a)	(a)
Carpenters	313	\$1.87½	1	7	7	13	13	0.02	\$581
	313	2.00	3	91	30	182	61	0.29	626
	313	2.25	1	11	11	24	24	0.04	633
Total	313	2.01	5	109	23	219	44	0.36	629
Civil engineers	313	1.50	3	10	3	15	5	0.03	470
	313	1.75	1	8	8	14	14	0.03	543
	313	1.50	1	27	27	51	51	0.09	591
Total	313	1.78	5	45	9	80	16	0.15	556
Drivers	313	1.15	1	7	7	8	8	0.02	358
	313	1.80	2	106	53	191	96	0.34	564
	313	1.90	8	1,288	161	2,479	310	4.12	602
	313	2.00	14	905	64	1,941	139	2.06	630
	313	2.25	1	25	25	56	56	0.08	701
Total	313	1.95½	28	2,391	83	4,675	180	7.64	612
Drivers and miners.....	313	(a)	7	(a)	(a)	2,003	299	(a)	(a)
Dumpers	313	1.40	4	519	130	749	187	1.36	452
	313	1.60	5	245	49	298	79	0.78	502
Total	313	1.49½	9	764	85	1,142	127	2.44	468
Dumper and miner	313	(a)	1	(a)	(a)	309	309	(a)	(a)
Dumper and oiler.....	313	1.29	1	134	134	173	173	0.42	404
Engineers	313	1.26½	1	238	238	365	365	0.92	297
	313	2.00	1	209	209	625	625	0.96	654
	313	2.50	1	286	286	700	700	0.91	706
Total	313	1.98½	3	873	291	1,690	563	2.79	606
Engineer and fireman.....	365	1.90	1	346	346	657	657	0.95	693
Firemen	365	1.65	1	102	102	170	170	0.28	606
	365	1.85	1	326	326	596	596	0.89	666
Total	365	1.78½	2	428	214	765	383	1.17	652
Fireman and miner	365	(a)	1	(a)	(a)	148	148	(a)	(a)
Foreman.....	313	3.10	1	313	313	970	970	1.00	970
Head cutters.....	365	(a)	12	(a)	(a)	1,074	90	(a)	(a)
Head cutters and miners.....	365	(a)	17	(a)	(a)	6,854	403	(a)	(a)
Laborers.....	313	.65	1	11	11	7	7	0.04	199
	313	1.00	1	47	47	47	47	0.15	313
	313	1.25	5	120	24	150	30	0.38	391
	313	1.40	2	101	51	142	71	0.32	440
	313	1.50	12	835	28	504	42	1.07	471
	313	1.60	4	106	26	169	42	0.34	504
	313	1.75	4	82	21	143	36	0.26	546
	313	1.90	1	284	284	543	543	0.91	598
	313	2.00	10	542	54	1,084	108	1.73	626
	313	2.25	1	19	19	43	43	0.08	708
	313	1.72	41	1,646	40	2,832	69	5.26	539
Total	313	1.72	41	1,646	40	2,832	69	5.26	539
Laborers and miners.....	365	(a)	12	(a)	(a)	2,594	210	(a)	(a)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

B.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. — — — — —

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Workmen had continuous employment.	
			Dis- tinct em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.
				Total.	Aver- age.	Total.	Aver- age.	
Mason.....	313	\$2.25	1	4		80	80	0.91
Mechanic.....	313	2.00	1	6	5	13	13	0.92
Miners.....	305	(a, b)	634	(b)	(b)	474, 168	180	(b)
Miner and propman.....	305	(b)	1	(b)	(b)	245	245	(b)
Miner and pumpman.....	305	(b)	1	(b)	(b)	324	324	(b)
Miner and shifter.....	305	(b)	1	(b)	(b)	478	478	(b)
Miner and trapper.....	305	(b)	1	(b)	(b)	145	145	(b)
Office boy.....	313	.80	1	4	4	3	3	0.91
Others.....	313	1.00	2	7	7	7	7	0.92
	313		1	20	20	34	34	0.95
Total.....	313	1.15	3	27	16	81	16	0.90
Miner and trapper.....	313	.80	1	292	292	344	344	0.94
Policeman.....	313	.80	2	103	52	160	79	0.93
Propman and weighman.....	313	1.07	1	118		231	221	0.98
Pumpman.....	313	1.00	3	362	120	653	174	1.12
	313	1.00	1	313	104	813	171	1.12
Total.....	313	1.04	6	681	114	1, 064	177	2.18
Shifter.....	313		1	254	254	433	433	0.81
Gate picker.....	313	1.50	1	241	241	364	364	0.77
Stable boss.....	305	1.01	1	305	305	568	568	1.00
Tracklayer.....	313	2.15	1	317	317	692	692	1.01
Trappers.....	313	.61	25	1, 450	58	894	36	4.06
Watchmen.....	313	1.75	1	25	25	44	44	0.98
Weighmasters.....	313	1.50	1	97	97	147	147	0.81
		2.34	1	236	236	530	530	0.75
Total.....	313	2.03	3	333	107	677	339	1.06
The establishment.....		(a)	639	(c)	(e)	112, 628	177	(e)

ESTABLISHMENT No. — — — — —

(No statement of cost of production for this establishment is shown in Table VIII.)

Blacksmiths.....	313	\$2.00	6	315	136	\$1, 024	6771	2.61
	313	2.15	5	672	134	1, 075	336	2.15
Total.....	313	2.31	11	1, 400	135	2, 303	308	4.76
Blacksmiths' helpers.....	313	1.00	11	586	53	567	53	1.87
	313	1.25	9	635	71	897	90	2.03
	313	1.50	4	76	19	114	29	0.21
	313	1.75	2	120	65	217	108	0.41
Total.....	313	1.21	26	1, 426	85	1, 725	66	4.55
Blacksmiths' helpers and haulers.....	313	1.15	2	110	50	121	66	0.37

a No information is regard to miners' supplies.

b Paid by the quantity. The daily rate of pay and days of work done cannot be given.

c No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

R.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. —. —Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ployed.
				Total.	Aver- age.	Total.	Aver- age.	
Carpenters	312	\$1.00	2	4	2	94	23	0.01
	313	1.25	1	17	17	21	21	0.05
	312	1.40	0	251	42	354	59	0.80
	313	1.50	24	1,002	67	2,422	101	0.12
	312	1.60	1	9	9	14	14	0.03
	313	1.75	2	138	69	237	119	0.44
	312	1.87½	3	350	120	673	224	1.15
	313	2.00	3	395	132	1,764	221	2.86
	312	2.50	1	251	251	629	629	0.80
	313	3.01½	1	224	224	670	670	0.72
	312	4.80	1	5	5	24	24	0.02
Total	312	1.31½	50	1,755	75	0,811	126	12.00
Carpenter and laborer	313	1.32½	1	27	27	40	40	0.12
Carpenters and miners	313	1.74½	3	121	40	211	70	0.39
Entrymen	312	0.80	1	31	■	23	23	0.10
	313	1.00	17	68	4	60	4	0.22
	312	1.25	9	120	15	166	19	0.43
	313	1.40	3	163	34	144	48	0.53
	312	1.50	12	157	12	246	21	0.50
	313	2.00	14	190	14	396	28	0.62
	312	2.25	2	46	23	104	62	0.16
	313	2.60½	1	3	3	8	8	0.01
	313	(a)	29	(a)	(a)	3,273	116	(a)
Total	313	(b)	30	(b)	(b)	4,528	61	(b)
Entrymen and haulers	312	1.47	5	201	62	284	77	0.82
Entrymen and laborers	313	(a)	0	(a)	(a)	630	126	(a)
Entrymen and miners	312	1.51	3	43	22	65	22	0.14
	313	2.01	1	110	110	220	220	■
Total	312	1.57½	8	162	34	304	■	■
Entryman and timberman	313	(a)	1	(a)	(a)	162	162	(a)
Entryman and water boiler	313	.67½	1	60	60	■	62	0.20
Foreman, haulers	313	2.25	1	235	235	522	522	0.75
Foremen, laborers	312	1.24	3	570	192	760	256	1.24
	313	1.72½	2	402	201	677	338	1.23
	312	2.90	1	9	9	24	24	0.06
Total	313	1.40	0	906	104	■	245	2.13
Haulers	312	.43	1	78	78	34	34	0.24
	313	.50	10	261	67	428	24	2.72
	312	.80	4	173	43	102	26	0.55
	313	.70	1	214	214	146	146	0.68
	312	.75	6	144	24	108	18	0.46
	313	.90	2	208	102	178	60	0.66
	312	1.00	23	544	24	857	24	1.74
	313	1.10	5	200	40	218	44	0.64
	312	1.18	2	60	30	68	24	0.19
	313	1.20	2	60	30	82	■	0.22
	312	1.25	17	322	19	405	24	1.03
	313	1.35	6	410	68	646	61	1.31
	312	1.45	8	188	22	260	24	0.86
	313	1.50	19	682	36	1,021	54	2.13
	312	1.60½	6	364	34	600	151	1.80
	313	1.75	4	11	3	10	5	0.04
	312	1.81½	4	938	126	1,027	267	1.73

a. Paid by the quantity. The daily rate of pay and days of work done cannot be given.
 b. No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

R.—Bituminous Coal: UNITED STATES—Continued.

ESTABLISHMENT No. — —Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
			Different employes.	Days of work done.		Earnings.		Necessary employes.	Consequent average earnings per employed.
				Total.	Average.	Total.	Average.		
Miners—continued	312	\$2.00	10	172	11	\$343	\$21	0.26	\$221
	313	2.25	2	130	65	316	105	0.44	291
	313	(a)	14	(a)	(a)	1,970	141	(a)	(a)
Total	313	(b)	122	(b)	(b)	5,735	54	(b)	(b)
Miners and laborers	312	.00	1	200	200	100	150	0.60	200
	313	.00	2	50	25	65	32	0.32	30
	313	1.25	6	270	74	680	95	1.15	434
	313	1.00	1	13	13	19	10	0.94	65
	313	1.90	1	143	143	270	270	0.45	200
	313	(a)	2	(a)	(a)	300	150	(a)	(a)
Total	313	(b)	13	(b)	(b)	1,404	113	(b)	(b)
Miners and miners	312	1.00	4	190	60	200	75	0.60	400
	313	1.70	10	1,035	75	1,437	120	0.50	500
	313	2.00	1	134	134	251	251	0.60	400
	313	2.00	1	300	300	600	600	0.54	777
	313	(a)	2	(a)	(a)	300	150	(a)	(a)
Total	313	(b)	27	(b)	(b)	4,622	140	(b)	(b)
Miner and switchman	312	1.50	1	2	2	3	3	0.61	470
Miner and trimmer	312	2.15	1	241	241	510	510	0.77	671
Miner and water boiler	312	.55	1	62	62	34	34	0.20	172
Laborers	312	.00	1	55	55	23	22	0.13	151
	313	.50	1	106	106	54	54	0.25	125
	313	.00	1	21	21	17	13	0.75	134
	313	.05	1	16	16	10	10	0.45	100
	312	.75	4	204	60	213	30	0.94	222
	313	.00	4	45	11	60	11	0.77	111
	313	1.00	60	264	15.5	707	15	2.23	312
	313	2.10	6	262	10.5	323	12	1.83	344
	313	1.15	4	170	42.5	347	37	0.53	300
	313	1.25	23	1,070	46.5	1,616	64	0.73	1,000
	313	1.35	6	171	28.5	314	60	0.90	415
	313	1.60	6	111	18.5	311	32	0.71	320
	313	1.50	16	113	13	730	30	1.70	472
	313	1.05	4	106	26.5	600	30	1.20	320
	313	1.07	2	41	20.5	73	17	0.71	100
	313	2.00	11	11	11	11	11	0.71	100
	313	(a)	130	(a)	(a)	11,300	82	(a)	(a)
Total	313	(b)	200	(b)	(b)	17,300	30	(b)	(b)
Laborers and miners	312	1.25	3	1,016	60	170	30	1.40	400
	313	1.50	1	101	101	210	210	0.75	200
	313	1.75	3	106	35	307	61	0.77	270
	313	1.95	3	106	35	300	61	0.71	270
	313	(a)	60	(a)	(a)	4,000	100	(a)	(a)
Total	313	(b)	60	(b)	(b)	4,200	111	(b)	(b)
Laborer and timberman	312	.00	1	0	0	24	24	0	0
Laborer and tram-car repairs	312	1.50	1	0	0	24	24	1.50	0
Laborer and tram-road repairs	312	.00	1	0	0	0	0	0	0
Laborer and transport	312	1.00	1	0	0	0	0	1.00	0
Miscellaneous	312	1.00	2	0	0	0	0	1.00	0
	313	1.00	2	0	0	0	0	1.00	0
Total	313	1.00	3	0	0	0	0	1.00	0

4. Pay to the person. The daily rate of pay and days of work have cannot be given.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

R.—Bituminous Coal: UNITED STATES—Concluded.

ESTABLISHMENT No. —.—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Miners	313	a \$2.00	812	45,688	56	a \$91,376	\$113	145.97	\$628
Miner and tram-road repairer ..	313	(b)	1	(b)	(b)	110	110	(b)	(b)
Teamsters	313	.75	2	7	4	5	3	0.03	224
	313	1.00	16	103	6	104	7	0.33	316
	313	1.15	2	67	34	78	39	0.21	364
	313	1.25	8	408	51	503	63	1.30	385
	313	1.40	1	229	220	317	317	0.73	433
	313	1.68	1	70	70	117	117	0.22	523
	313	2.33½	3	9	5	21	11	0.03	730
Total	313	1.28	32	893	28	1,144	36	2.84	401
Teamster and tram-road re- pairer.	313	1.25	1	4	4	5	5	0.01	391
Timbermen	313	(a)	23	(a)	(a)	2,317	144	(a)	(a)
Tram-road repairers	313	1.50	2	268	134	413	207	0.86	483
	313	2.00	7	353	55	763	109	1.22	625
	313	2.12½	1	100	160	340	340	0.51	665
Total	313	1.87	10	810	81	1,516	152	2.59	686
Trammers	313	.50	1	44	44	22	22	0.14	157
	313	1.00	7	14	2	14	2	0.04	313
	313	1.50	1	2	2	3	3	0.01	470
Total	313	.65	9	60	7	39	4	0.19	203
Water boilers	313	1.00	6	394	66	429	72	1.26	341
The establishment .....	.....	(c)	1,600	(c)	(c)	152,985	96	(c)	(c)

S.—Bituminous Coal: DOMINION OF CANADA.

ESTABLISHMENT No. 148.

Bankmen	313	\$1.10	7	1,716	245	\$1,806	\$271	5.43	\$346
	313	1.20	1	318	318	381	381	1.02	375
Total	313	1.12	8	2,034	254	2,277	285	6.50	350
Blacksmiths	313	1.10	2	497	249	546	273	1.59	344
	313	1.25	1	239	238	298	298	0.76	390
	313	1.60	1	307	307	491	491	0.96	501
Total	313	1.28	4	1,043	261	1,335	334	2.33	401
Bottomers	313	.80	3	668	223	549	183	2.13	257
	313	.90	2	359	180	323	163	1.15	283
	313	1.25	1	329	329	411	411	1.05	391
Total	313	.94½	6	1,356	226	1,283	214	4.33	296
Brakemen, incline	313	.50	1	302	302	151	151	0.96	167
	313	.65	3	708	235	463	154	2.26	205
	313	.75	2	493	248	382	191	1.58	242
	313	.90	7	1,242	177	1,096	157	2.97	276
Total	313	.76	13	2,745	211	2,092	161	2.77	239

a No information in regard to miners' supplies.

b Paid by the quantity. The daily rate of pay and days of work done cannot be given.

c No total can be made for the reason shown in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

S.—Bituminous Coal: DOMINION OF CANADA—Continued.

ESTABLISHMENT No. 148—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Carpenters	313	\$1.25	2	614	307	\$787	\$254	1.08	\$881
	313	1.30	2	234	117	306	153	0.75	488
	313	1.35	1	34	34	45	45	0.11	414
	313	1.40	1	250	250	333	333	0.83	439
	313	2.25	1	277	277	623	623	0.88	704
Total	313	1.48½	7	1,418	203	2,103	300	4.53	464
Deputy overmen	313	1.40	1	263	263	367	367	0.84	438
	313	1.45	2	574	287	832	416	1.88	454
	313	1.50	1	296	296	443	443	0.95	488
Total	313	1.45	4	1,133	283	1,642	411	3.63	484
Drivers	313	.65	5	761	152	483	96	2.43	183
Drivers and laborers	313	.60½	2	469	235	326	163	1.50	218
Driver and miners' helper	313	1.02½	1	237	237	248	248	0.78	321
Enginemen, fan	365	1.20	2	783	392	615	458	2.09	488
Enginemen, hauling	313	1.20	2	475	238	569	285	1.53	375
Engineman, winding	313	1.25	1	330	330	412	412	1.65	391
Extra hand	313	1.00	1	252	252	252	252	0.81	313
Firemen	313	.80	1	270	270	215	215	0.96	249
	313	.90	1	314	314	283	283	1.00	282
	365	1.15	3	597	199	686	229	1.64	419
Total	337	1.00½	5	1,181	236	1,184	237	3.50	338
Laborers, surface	313	.50	5	453	91	226	45	1.45	156
	313	.60	1	245	245	143	143	0.78	183
	313	.70	2	144	72	101	51	0.46	220
	313	.85	1	7	7	6	6	0.02	268
	313	.90	1	292	292	265	265	0.93	284
	313	1.00	9	1,399	155	1,416	157	4.47	317
	313	1.05	3	632	211	661	220	2.02	327
	313	1.10	2	310	155	341	171	0.99	344
Total	313	.90½	24	3,482	146	3,159	132	11.12	284
Laborers, underground	313	.50	1	164	164	83	82	0.63	157
	313	.65	1	309	309	197	197	0.99	209
	313	.90	2	143	72	129	65	0.46	282
	313	1.10	8	1,326	166	1,435	179	4.24	339
	313	1.20	14	1,865	133	2,228	160	5.96	376
	313	1.35	1	285	285	384	384	0.91	422
	313	1.40	1	280	280	402	402	0.91	440
	313	1.45	1	333	333	483	483	1.06	454
Total	313	1.13½	29	4,711	162	5,350	184	15.05	355
Laborers and miners' helpers ..	313	1.09½	2	190	95	208	104	0.61	343
Lampmen	313	.50	1	323	323	161	161	1.03	156
	313	1.10	3	730	243	802	267	2.33	344
	313	1.25	1	342	342	427	427	1.09	391
Total	313	.99½	5	1,395	279	1,390	278	4.45	312
Machinists	313	1.30	1	340	340	441	441	1.09	408
	313	2.22½	1	313	313	696	696	1.00	696
Total	313	1.74	2	653	327	1,137	569	2.09	545
Mason	313	2.00	1	310	310	620	620	0.99	626
Mason's helper	313	1.20	1	308	308	360	360	0.96	366
Mine boss	313	2.83½	1	313	313	1,200	1,200	1.00	1,200

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

S.—Bituminous Coal: DOMINION OF CANADA—Concluded.

ESTABLISHMENT No. 143—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Mine bosses, assistant	365	\$1. 66	1	365	365	\$589	\$589	1. 00	\$589
	365	2. 00	1	365	365	730	730	1. 00	730
Total	365	1. 80½	2	730	365	1, 319	660	2. 00	660
Miners	313	a 1. 51½	15	3, 245	216	a 4, 922	828	10. 37	475
	313	a 1. 75½	34	7, 659	225	a 13, 438	395	24. 47	549
	313	a 1. 92½	24	5, 814	242	a 11, 188	466	18. 58	602
	313	a 2. 24	9	2, 390	266	a 5, 357	595	7. 64	702
	313	a 2. 48	4	1, 029	257	a 2, 554	639	3. 29	777
Total	313	a 1. 86	86	20, 137	234	a 37, 459	436	64. 35	582
Miners and miners' helpers...	313	1. 26	1	222	222	280	280	0. 71	396
	313	1. 59½	5	1, 086	217	1, 734	347	3. 47	500
	313	1. 76	1	157	157	276	276	0. 50	550
	313	2. 16	1	217	217	469	469	0. 69	676
Total	313	1. 64	8	1, 682	210	2, 759	345	5. 37	513
Miners and timbermen	313	1. 48	4	862	216	1, 274	319	2. 75	463
	313	1. 74	1	277	277	482	482	0. 88	545
Total	313	1. 54	5	1, 139	228	1, 756	351	3. 63	483
Miners' helpers	313	1. 20	43	5, 667	132	6, 836	159	18. 11	378
	313	1. 30	2	523	262	676	338	1. 67	405
Total	313	1. 21½	45	6, 190	138	7, 512	167	19. 78	380
Pick handler	313	1. 15	1	292	292	335	335	0. 93	350
Plate layers	313	1. 10	2	333	167	366	163	1. 06	344
Pumpman	313	1. 25	1	316	316	427	427	1. 01	423
Screeners	313	. 50	1	266	266	133	133	0. 35	157
	313	1. 10	5	1, 363	273	1, 500	300	4. 35	344
Total	313	1. 00	6	1, 639	272	1, 633	272	5. 20	314
Slag hauler	313	1. 10	1	211	211	234	234	6. 67	333
Stablemen	365	1. 00	1	337	337	337	337	0. 92	365
	365	1. 20	1	353	353	424	424	0. 97	438
Total	365	1. 10½	2	690	345	761	381	1. 89	403
Storekeeper and timekeeper.	313	2. 11½	1	312	312	660	660	1. 00	662
Timbermen	313	1. 30	13	1, 680	129	2, 202	169	5. 37	410
	313	1. 25	12	2, 942	245	3, 968	331	9. 40	423
	313	1. 40	4	1, 122	281	1, 569	393	3. 56	436
	313	1. 45	2	550	275	799	400	1. 76	455
Total	313	1. 35½	31	6, 294	203	8, 538	275	20. 11	425
Trappers	313	. 40	6	803	134	330	55	2. 57	129
Watchman	365	1. 00	1	353	353	353	353	0. 97	365
Weighmen	313	. 90	1	311	311	280	280	0. 69	292
	313	1. 10	1	301	301	331	331	0. 96	344
Total	313	1. 00	2	612	306	611	306	1. 95	313
The establishment .....	.....	1. 39	326	67, 281	206	93, 582	287	213. 52	438

a Miners' supplies are furnished by the company.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

T.—Bituminous Coal: CONTINENT OF EUROPE.

ESTABLISHMENT No. 156.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ployee.	Conse- quent average earnings per em- ployee.
				Total	Aver- age.	Total.	Aver- age.		
Brakemen	77	\$0.25	3	106	35	\$27	\$0	1.33	\$20
	77	.20	3	145	73	42	21	1.00	22
Total	77	.27½	5	251	50	69	14	2.26	21
Cagomen	77	.53	1	53	53	34	34	0.75	43
	77	.62	2	126	63	79	40	1.63	48
	77	.65½	1	17	17	11	11	0.22	50
	77	.60½	2	91	46	63	32	1.13	53
Total	77	.64	6	292	49	187	31	2.73	49
Cleaners.....	77	.20	2	107	54	27	14	1.30	19
Cleaners, lamp.....	77	.31	1	77	77	24	24	1.09	24
	77	.37	1	76	76	26	23	0.99	23
Total	77	.34	2	153	77	52	20	1.90	26
Drivers.....	77	.34	1	70	70	24	24	0.91	26
	77	.33½	1	65	65	25	25	0.64	30
	77	.46½	1	70	70	32	32	0.91	35
	77	.53	1	73	73	43	43	0.95	45
	77	.60	1	71	71	42	42	0.92	46
	77	.62	1	8	8	5	5	0.10	43
	77	.63½	1	44	44	28	23	0.57	49
	77	.71½	1	73	73	53	53	0.95	56
	77	.96½	1	2	2	2	2	0.03	77
Total	77	.53½	9	476	53	254	23	6.18	41
Dumpers	77	.23	1	4	4	1	1	0.03	19
	77	.29	1	74	74	21	21	0.96	22
	77	.56	1	75	75	43	43	0.97	44
Total	77	.42½	3	153	51	65	22	1.98	33
Engineers	77	.63	2	87	44	50	30	1.13	52
	77	.87	2	174	87	151	76	2.26	67
Total	77	.80½	4	261	65	210	53	3.39	62
Firemen.....	77	.48	1	12	12	6	6	0.16	39
	77	.51	2	37	19	19	10	0.43	40
	77	.60	6	223	37	133	22	2.90	46
Total	77	.56	9	272	30	158	18	3.54	45
Foreman.....	77	.63	1	83	83	54	54	1.14	47
Gallery cutters.....	77	.91½	34	1,187	35	1,084	32	15.42	70
	77	1.06	43	2,191	51	2,323	54	23.45	82
	77	1.24½	1	16	16	20	20	0.21	96
Total	77	1.01	78	3,394	44	3,427	44	44.08	78
Gallery cutter and miner....	77	1.00	1	74	74	74	74	0.96	77
Gallery cutters' helpers.....	77	.25	1	25	25	6	6	0.32	18
	77	.28	2	147	74	41	31	1.91	21
	77	.30	2	129	65	30	20	1.63	23
	77	.31	1	75	75	23	23	0.97	24
	77	.33	3	180	60	57	19	2.34	24
	77	.34	2	63	32	21	11	0.82	26
	77	.25½	2	125	63	48	24	1.75	27
	77	.42½	3	123	41	51	17	1.00	32

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

T.—Bituminous Coal: CONTINENT OF EUROPE—Continued.

ESTABLISHMENT No. 156—Continued

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dis- favor- able em- ploy- ea.	Days of work done.		Earnings.		Neces- sary em- ployea.
				Total.	Aver- age.	Total.	Aver- age.	
Gallery cutters' helpers—con- cluded.	77	\$0.44	2	121	40	635	516	1.57
	77	.45	2	224	75	105	35	2.51
	77	.45	1	25	25	12	12	0.52
	77	.46	1	75	75	28	28	0.57
	77	.51	1	66	66	34	34	0.66
	77	.52	1	65	65	34	34	0.54
	77	.52	12	710	55	277	20	8.22
	77	.54	5	118	22	42	12	1.51
	77	.57	2	105	25	68	22	1.26
	77	.72	2	72	24	52	12	0.95
	77	.77	5	227	47	162	36	2.05
	77	.87	4	71	12	61	15	0.62
	77	.89	4	87	22	78	20	1.12
	77	.96	1	2	2	2	2	0.02
Total.....	77	.50	54	2,064	45	1,442	22	27.06
Gallery repairers.....	77	.72	2	4	2	2	2	0.05
	77	.77	2	200	42	106	22	2.71
	77	.87	12	226	18	202	16	2.89
	77	.92	4	125	31	117	22	1.02
	77	.96	14	571	41	561	29	7.42
	77	1.00	2	4	2	4	2	0.05
Total.....	77	.91	40	1,142	29	1,042	26	14.24
Gallery repairer and miner... Handers.....	77	.94	1	19	19	18	12	0.25
	77	.29	2	162	72	41	21	1.60
Inclined-plane men.....	77	.25	1	9	9	2	2	0.12
	77	.34	4	208	50	70	12	2.00
	77	.35	2	72	37	22	14	0.95
	77	.62	7	214	46	106	26	4.00
	77	.63	2	58	29	27	12	0.75
	77	.71	4	87	26	66	17	1.26
Total.....	77	.56	20	781	26	461	26	8.76
Laborers.....	77	.90	5	20	3	6	1	0.12
Loaders.....	77	.62	1	25	25	20	20	0.45
	77	.62	2	41	21	25	12	0.52
	77	.66	1	12	12	8	8	0.16
	77	.67	12	604	50	400	26	9.01
	77	.72	1	49	49	27	27	0.64
	77	.96	1	65	65	50	50	0.64
	77	1.00	1	14	14	14	14	0.12
Total.....	77	.60	20	910	46	632	22	11.21
Markers.....	77	.52	2	23	41	42	22	1.07
Masons.....	77	.62	2	11	6	6	6	0.16
Masons' helper.....	77	.57	1	7	7	4	4	0.09
Mechanics.....	77	1.01	1	75	75	144	144	0.57
Mine bosses.....	77	1.02	2	208	70	216	72	2.71
	77	1.26	2	206	66	261	87	2.66
Total.....	77	1.15	6	415	60	477	80	5.26
Mine bosses, assistant.....	77	.77	6	245	41	196	22	3.16
Mine boss, chief.....	77	1.32	1	72	72	111	111	0.96
Miners.....	77	1.00	64	4,221	61	4,256	45	58.25
	77	1.11	40	2,034	48	2,277	57	24.06
Total.....	77	1.22	124	4,285	49	4,533	49	22.06

* From the earnings here given miners bought their own powder at a cost of 25 cents per week.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

T.—Bituminous Coal: CONTINENT OF EUROPE—Concluded.

ESTABLISHMENT No. 186—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.						Condition of workmen had continuous employment.	
			Dis- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.	
				Total.	Aver- age.	Total.	Aver- age.			
Miners' helpers.....	77	\$0.84	1	12	12	84	84	0.18	27	27
	77	.84	1	43	43	15	15	0.58	27	27
	77	.42	2	122	61	53	27	1.58	27	27
	77	.40	1	85	85	31	31	0.84	27	27
	77	.40	2	137	68	63	32	1.65	27	27
	77	.38	1	48	48	24	24	0.82	27	27
	77	.38	2	112	56	22	22	1.47	27	27
	77	.38	1	85	85	39	39	0.84	27	27
	77	.41	1	54	54	33	33	0.70	27	27
	77	.38	4	161	40	100	25	2.09	27	27
	77	.38	3	183	61	123	41	2.49	27	27
	77	.67	1	45	45	30	30	0.56	27	27
	77	.38	1	18	18	15	15	0.23	27	27
	77	.32	1	8	8	8	8	0.12	27	27
Total.....	77	.58	23	1,074	47	909	28	12.93	27	27
Oilmen.....	77	.28	2	72	24	21	7	0.94	28	28
	77	.58	1	84	84	17	17	0.44	28	28
Total.....	77	.38	4	166	27	38	10	1.38	28	28
Pickers.....	77	.35	3	212	71	54	18	2.77	29	29
Pumpmen.....	77	.68	1	79	79	46	46	1.02	45	45
	77	.60	1	70	70	42	42	0.91	46	46
Total.....	77	.59	2	149	75	88	44	1.94	45	45
Sorters.....	77	.28	1	78	78	21	21	0.86	22	22
	77	.51	5	166	33	80	17	2.16	40	40
Total.....	77	.45	6	239	40	107	18	3.11	34	34
Sorters, chief.....	77	.86	2	180	53	97	32	2.08	47	47
Stablemen.....	77	.61	5	139	32	98	20	2.08	47	47
Washmen.....	77	.98	1	78	78	75	75	1.61	74	74
The establishment.....		.81	472	30,822	44	16,844	34	370.40	62	62

ESTABLISHMENT No. —.

(No statement of cost of production for this establishment is shown in Table VIII.)

Engineer.....	82	\$0.73	1	59	59	342	342	1.13	339	339
Firemen.....	82	.78	2	104	52	73	37	2.00	37	37
Gallery cutters.....	82	.95	6	285	48	271	45	5.48	40	40
Laborers.....	82	.51	3	61	21	31	16	1.17	26	26
Loaders.....	82	.40	7	212	45	164	23	6.00	28	28
	82	.64	3	132	44	85	28	2.54	33	33
	82	.94	1	37	37	38	38	0.71	40	40
Total.....	82	.57	11	481	44	374	28	9.25	30	30
Machinist.....	82	.81	1	52	52	42	42	1.00	42	42
Miners.....	82	5.87	54	2,096	39	1,830	34	49.20	46	46
Overseer.....	82	.32	1	60	60	50	50	1.15	43	43
The establishment.....		.82	78	3,102	41	2,314	34	61.38	43	43

a In addition \$500 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 211.

b No information in regard to miners' supplies.

c The earnings here shown are for only a part of the employees, but they are thought to be fairly representative.

PART II.—TIME AND EARNINGS.

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TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

U.—Bituminous Coal: GREAT BRITAIN.

ESTABLISHMENT No. 170.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Diff. from em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ploy- ee.	Conse- quent average earnings per em- ploy- ee.
				Total.	Average.	Total.	Average.		
Air-way men	01	\$1.25	6	323	54	\$403	\$97	3.55	\$114
Bankmen	01	1.33½	9	675	75	936	104	7.42	128
Blacksmiths	01	.70½	1	88	78	63	63	0.86	73
	01	.85	1	75	75	65	65	0.83	78
	01	1.07	1	78	78	80	80	0.94	80
	01	1.06½	1	80	80	87	87	0.88	88
	01	1.15	1	74	74	87	87	0.81	107
	01	1.22	1	87	87	115	115	0.96	120
Total	01	1.05½	6	670	78	426	81	5.17	96
Blacksmiths' helpers	01	.67½	4	327	83	163	36	3.59	40
	01	.69½	1	80	80	48	48	0.88	58
Total	01	.67	5	407	81	191	36	4.47	43
Boilersmith	01	1.83½	1	80	80	120	120	0.98	140
Bricklayer	01	1.43½	1	50	50	84	84	0.66	130
Bricklayer's helper	01	.41	1	79	79	64	64	0.87	74
Bye-workmen	01	.68½	3	106	84	73	87	1.10	62
	01	.71½	1	73	72	53	53	0.79	67
	01	.79½	7	311	41	248	25	3.42	77
	01	.84	1	73	72	62	62	0.90	79
	01	.89	1	63	62	57	57	0.80	81
	01	1.21½	7	605	73	637	96	2.53	112
	01	1.39	4	80	22	115	25	0.88	114
Total	01	1.01	23	1,221	63	1,336	94	13.43	97
Capstan men	01	.68	1	83	83	58	68	0.91	64
	01	.81	1	76	76	58	68	0.77	78
	01	1.10½	1	64	50	63	62	0.62	103
Total	01	.85	3	323	76	179	60	2.30	73
Carpenters	01	.88½	1	77	77	71	71	0.85	84
	01	.89	1	72	72	71	71	0.80	80
	01	1.10½	1	67	67	80	80	0.74	106
	01	1.23½	1	54	54	72	72	0.50	121
Total	01	1.08½	4	271	66	294	74	2.96	96
Coal inspector	01	1.30½	1	78	78	87	87	0.98	112
Deputy overman	01	1.38	2	619	77	661	106	0.90	127
	01	1.48	5	437	67	663	123	4.80	128
Total	01	1.44½	13	1,056	81	1,324	117	11.06	131
Drivers	01	.86	2	85	42	73	37	0.83	78
Elevator tenders	01	.38½	1	75	75	30	30	0.52	80
	01	.42½	1	78	70	31	31	0.77	44
	01	.56½	1	81	81	46	46	0.60	52
	01	.64	1	69	69	45	45	0.76	60
	01	.70	1	72	72	53	53	0.86	64
	01	.80½	1	78	78	79	79	0.56	82
Total	01	.81½	6	451	73	277	46	4.86	86
Engineers, fan	01	1.19½	1	77	77	87	87	0.86	103
	01	1.27½	1	76	76	98	98	0.84	117
Total	01	1.21	2	153	77	185	93	1.60	111

[illegible]

項目	品名	単位	数量	金額	備考
1	米	kg	100	1000	
2	小麦	kg	50	500	
3	大豆	kg	20	200	
4	雑穀	kg	30	300	
5	油	kg	10	100	
6	塩	kg	5	50	
7	味噌	kg	15	150	
8	醤油	kg	10	100	
9	酒	kg	20	200	
10	茶	kg	5	50	
11	糖	kg	10	100	
12	肉	kg	10	100	
13	魚	kg	10	100	
14	野菜	kg	10	100	
15	果物	kg	10	100	
16	その他	kg	10	100	
17	合計				

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

U.—Bituminous Coal: GREAT BRITAIN—Continued.

ESTABLISHMENT No. 170—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dis- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Mechanics	91	\$0.25	1	80	80	\$70	\$70	0.88	\$80
	91	1.33	1	82	82	109	109	0.90	121
Total	91	1.10½	2	162	81	179	90	1.78	101
Mechanics' shop boy	91	.53½	1	74	74	38	38	0.81	47
Miners.....	91	1.31½	65	3,420	53	4,504	69	37.69	119
	91	1.56	198	11,063	56	17,258	87	121.57	142
	91	1.79	110	5,865	53	10,481	95	61.34	163
	91	1.90½	6	338	56	673	113	2.71	182
	91	(a)	32	(a)	(a)	2,606	116	(a)	(a)
Total	91	(b)	411	(b)	(b)	36,611	89	(b)	(b)
Plate layers	91	.85	2	151	76	122	66	1.66	80
	91	1.02	1	81	81	85	85	0.89	95
Total	91	.93½	3	232	77	217	72	2.55	85
Plumber	91	1.23½	1	79	79	100	100	0.87	115
Rippers.....	91	1.09½	7	102	15	112	16	1.12	100
	91	1.46	9	528	60	771	86	5.80	133
	91	1.70½	9	675	75	1,151	128	7.42	155
	91	2.13	2	150	75	319	160	1.65	194
Total	91	1.61½	27	1,456	54	2,353	87	15.09	147
Road repairers.....	91	1.20	6	450	75	540	90	4.95	109
	91	1.48	6	444	74	635	106	4.83	130
Total	91	1.31½	12	894	75	1,175	96	9.83	129
Road repairers' helpers.....	91	.48½	4	300	75	152	38	3.30	46
Roadman	91	(a)	1	(a)	(a)	70	70	(a)	(a)
Sawyer	91	1.06	1	67	67	71	71	0.74	96
Screeners.....	91	.30	1	73	73	22	22	0.80	27
	91	.32½	2	79	40	25	13	0.87	29
	91	.35½	6	404	67	142	24	4.44	32
	91	.38½	2	125	63	40	25	1.37	36
	91	.42½	1	76	76	33	33	0.84	40
	91	.51	1	74	74	39	39	0.81	48
	91	.60½	2	97	49	59	30	1.07	55
	91	.68	2	117	59	81	41	1.29	62
	91	.74½	1	76	76	56	56	0.84	67
	91	.76½	1	45	45	35	35	0.49	71
	91	.81	1	62	62	51	51	0.66	75
	91	.82½	10	756	76	663	67	8.21	80
	91	.93½	5	217	43	200	40	2.38	84
Total	91	.66	35	2,201	63	1,457	42	24.19	60
Shaftman.....	91	1.42½	1	90	90	129	129	0.20	130
Stalthmen	91	.85	1	77	77	68	68	0.85	80
	91	.93½	1	70	70	70	70	0.84	84
	91	1.06½	1	70	70	74	74	0.77	96
Total	91	.95	3	223	74	212	71	2.48	87
Stalthmen's helper	91	.35½	1	76	76	27	27	0.54	32
Steward	91	2.09	1	78	78	210	210	0.86	245
Surveyor, assistant.....	91	1.21½	1	78	78	96	96	0.96	112

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
b No total can be made for the reason stated in the preceding footnote.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS.—Continued.

U.—Bituminous Coal: GREAT BRITAIN.—Concluded.

ESTABLISHMENT No. 170.—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employment.	Days of work done.		Earnings.		Necessary employment.
				Total.	Average.	Total.	Average.	
Timbermen.....	91	\$6.80	1	81	81	\$77	\$77	0.88
	91	1.21½	1	78	78	85	85	0.88
Total.....	91	1.08	2	159	80	172	86	1.75
Trappers.....	91	.32½	4	298	75	103	26	2.27
Wagon builders and repairers.	91	.88	2	153	76	151	76	1.70
	91	1.02½	1	62	62	65	65	0.60
	91	1.13	1	63	63	72	72	0.60
	91	1.21½	1	76	76	85	85	0.84
	91	1.38	1	78	78	103	103	0.88
Total.....	91	1.11½	6	433	73	496	81	4.78
Wagon builders' shop boy..	91	.61	1	77	77	46	46	0.85
Watchman.....	91	.97½	1	81	81	81	81	1.00
Water men.....	91	.78½	2	58	30	45	22	0.66
Weighman.....	91	1.31½	1	78	78	97	97	0.88
The establishment.....	(a)		77½	(b)	(c)	\$ 50, 194	77	(d)

V.—Coke: UNITED STATES.

ESTABLISHMENT No. 6.

Carpenter.....	79	\$2.60	1	77	77	\$185	\$185	0.87	\$186
Chargers.....	92	1.00	4	200	50	200	50	2.17	92
Cleaners, track.....	92	.80	1	12	12	7	7	0.14	80
	92	.75	1	15	15	11	11	0.16	67
	92	1.00	13	458	38	458	38	5.30	92
Total.....	92	.98	15	516	34	506	34	5.60	96
Coke boson.....	92	1.25	1	45	45	56	56	0.40	114
	92	2.60	1	88	88	230	230	0.98	240
Total.....	92	2.15	2	133	67	286	143	1.45	196
Drawers.....	92	1.70	104	2, 419	c 23	4, 110	40	26.29	156
Drivers.....	92	1.00	8	287	36	287	36	2.12	92
Dumpers.....	92	1.15	2	119	60	136	68	1.29	105
	92	1.60	1	84	84	125	125	0.91	137
Total.....	92	1.28½	3	203	68	261	87	2.20	116
Engineers, coal crusher.....	92	1.07½	2	92	46	151	77	1.00	154
Feeders, coal crusher.....	92	1.00	2	42	21	43	21	0.47	92
Foremen.....	92	2.50	1	4	4	10	10	0.04	230
	92	3.00	1	91	91	273	273	0.98	278
Total.....	92	2.98	2	95	46	283	142	1.63	274
Laborers.....	92	.80	2	64	32	32	16	0.70	66
	92	.75	2	46	23	34	17	0.50	66
	92	1.00	63	1, 293	16	1, 293	16	14.06	92
Total.....	92	.97	86	1, 463	16	1, 306	16	15.25	96

a No total can be made for the reason shown in the preceding footnote a.

b The earnings here shown are for three months only. The statement for this establishment on page 211 is for six months.

c The time of drawers has been estimated on the basis of four ovens per day.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

V.—Coke: UNITED STATES—Continued.

ESTABLISHMENT No. 8—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employes.	Days of work done.		Earnings.		Necessary employes.
				Total.	Average.	Total.	Average.	
Laborers, track.....	91	\$1.00	1	94	94	994	994	91.92
Loader.....	91	1.00	1	96	96	96	96	1.04
Mortar man.....	92	1.00	1	54	54	54	54	0.59
Watchmen.....	92	1.25	2	91	45	114	57	6.29
The establishment.....		1.38½	234	5,303	25	64,033	34	63.19

ESTABLISHMENT No. 13.

Blacksmith.....	313	\$1.00	1	228	228	9496	9496	0.73	9506
Car shifters.....	313	1.45	2	299	159	429	215	0.96	419
Carpenter.....	313	1.75	1	234	234	411	411	0.78	530
Cartmen.....	313	1.35	8	674	112	918	153	2.19	479
	313	1.50	1		6	9	9	0.02	479
Total.....	313	1.30½	7	680	97	927	132	2.17	627
Cartmen and drawers.....	313	1.45½	2	301	101	392	148	0.64	485
Chargers.....	313	1.70	1	25	25	43	43	0.08	539
	313	1.80	2	418	209	754	377	1.34	565
	313	1.83	1	224	224	406	406	0.72	567
Total.....	313	1.80½	4	667	167	1,203	301	2.14	565
Charger and watchman.....	313	1.65½	1	298	298	494	494	0.94	528
Drawers.....	313	1.30	39	1,515	64	3,508	90	2.04	426
	313	1.55	57	4,209	77	6,812	120	14.02	496
	313	1.64½	36	2,787	77	5,143	143	8.90	574
	313	2.07	51	5,123	100	10,603	209	16.37	646
	313	2.38	17	1,364	80	3,080	181	4.56	797
	313	2.60½	8	823	64	839	168	1.03	816
	313	2.73½	5	271	54	739	148	0.87	854
Total.....	313	1.63	210	16,771	80	30,718	146	33.59	873
Drawers and laborers.....	313	1.40	2	63	22	94	47	0.29	467
Drawer and masons' helper.....	313	1.52½	1	399	399	319	319	0.67	478
Foreman.....	313	2.28	1	313	313	1,020	1,020	1.00	1,920
Foreman, assistant.....	313	2.22	1	301	301	699	699	0.96	727
Laborers.....	313	1.00	3	199	39	199	39	0.35	313
	313	1.25	22	2,076	94	2,615	116	8.83	394
	313	1.30	14	2,190	156	2,840	203	7.00	406
	313	1.25	5	726	145	963	197	2.32	434
	313	1.45	2	44	22	63	32	0.14	449
	313	1.80	1	250	250	451	451	0.69	586
Total.....	313	1.31	47	5,395	113	7,061	130	17.24	419
Levelers.....	313	2.21	5	1,012	202	2,234	447	3.23	691
	313	2.37	5	763	153	1,808	363	2.44	742
Total.....	313	2.27½	10	1,775	178	4,042	404	5.67	713
Masons.....	313	2.50	1	19	19	49	49	0.08	791
	313	2.70	6	775	129	2,064	344	2.48	834
Total.....	313	2.66	7	794	113	2,113	392	2.54	833

a The earnings here shown are for three months only. The statement for this establishment on page 236 is for one year.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

V.—Coke: UNITED STATES—Continued.

ESTABLISHMENT No. 13—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Difference between employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.
				Total.	Average.	Total.	Average.	
Masons' helpers	313	\$1.30	7	708	114	\$1,538	\$148	2.55
Tinsmiths	313	1.35	5	350	179	463	241	1.14
Watchman	313	1.00	1	350	350	350	350	1.12
The establishment		1.74	807	39,736	87	\$3,538	170	\$5.01

ESTABLISHMENT No. 19.

Ashmen	313	\$1.48	3	99	33	396	632	0.22	\$125
	313	1.48	3	446	149	648	216	1.43	436
Total	313	1.44	6	515	89	744	124	1.04	461
Ashmen and laborer	313	1.23	1	53	53	69	69	0.17	418
Blacksmith	313	2.75	1	201	201	552	552	0.54	390
Blacksmith's helper	313	1.25	1	202	202	253	252	0.65	390
Carpenter	313	2.50	1	120	120	300	300	0.28	783
Charger	313	1.50	1	106	106	248	248	0.53	470
Drawers	313	1.23	28	2,315	89	3,632	117	7.40	418
	313	1.52	35	4,114	118	6,303	180	13.14	480
	313	1.74	23	5,192	157	9,073	273	16.39	547
	313	1.85	10	1,115	112	2,179	216	3.56	612
	313	2.24	2	202	101	453	227	0.65	792
	313	2.47	1	191	191	473	473	0.51	775
Total	313	1.66	107	13,129	123	21,533	301	41.05	513
Drawers and forgers	313	1.47	4	386	37	571	143	1.24	661
Drawer and laborer	313	1.93	11	14	14	27	27	0.04	904
Engineers	313	1.75	1	96	96	172	172	0.31	540
	313	2.23	1	321	321	725	725	1.03	707
Total	313	2.14	2	419	210	897	448	1.34	670
Foreman	313	2.40	1	213	313	780	780	1.00	780
Foremen, assistant	313	2.25	3	304	132	684	342	0.97	794
Workers	313	1.23	5	206	41	274	55	0.66	410
	313	1.48	9	461	51	683	76	1.47	464
	313	1.82	1	34	34	62	62	0.11	571
	313	2.00	1	6	6	13	12	0.03	626
Total	313	1.46	16	707	44	1,031	64	2.26	656
Levellers	313	1.50	1	245	245	391	391	0.78	500
	313	2.60	4	1,068	267	2,635	650	3.41	772
Total	313	2.30	5	1,313	263	3,026	605	4.19	721
Masons	313	2.75	3	31	10	84	28	0.10	840
Pumpmen	313	1.75	2	250	125	450	225	0.80	563
The establishment		1.72	154	18,124	118	\$31,249	203	57.90	546

* In addition \$3,522 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 234.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

V.—Coke : UNITED STATES—Continued.

ESTABLISHMENT No. 23.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Blacksmith.....	313	\$2.25	1	200	200	\$449	\$449	0.64	\$703
Blacksmith's helper.....	313	1.00	1	17	17	17	17	0.05	313
Chargers	313	1.00	12	1,510	126	1,532	128	4.82	318
Chargers and drawers.....	313	1.23½	2	191	96	236	118	0.61	387
Drawers	313	1.32½	4	130	33	172	43	0.42	414
	313	1.50	45	4,394	98	6,545	145	14.04	466
Total	313	1.48½	49	4,524	92	6,717	137	14.46	466
Drawers and forkers.....	313	1.19½	4	623	156	743	186	1.99	373
Drawers and laborers.....	313	1.16	11	783	67	850	77	2.34	363
	313	1.27½	7	434	61	541	77	1.35	390
Total	313	1.20	18	1,157	64	1,391	77	3.69	376
Foreman.....	313	2.14½	1	314	314	673	673	1.00	671
Foreman, assistant	313	1.50	1	246	246	369	369	0.79	470
Forkers.....	313	1.00	29	2,648	91	2,651	91	8.46	313
Laborers.....	313	1.00	42	1,038	46	1,941	46	6.19	313
Watchman	365	1.00	1	311	311	311	311	0.85	365
Water boys.....	313	.40	2	188	94	75	38	0.60	125
The establishment.....	.....	1.23½	163	13,667	85	17,105	105	44.15	387

ESTABLISHMENT No. 28.

Chargers	313	\$1.25	2	333	167	\$430	\$215	1.06	\$404
Drawers	313	1.26½	59	2,989	50	3,712	63	9.39	396
Drawer and elevator tender ..	313	1.12	1	110	110	123	123	0.35	250
Elevator tenders.....	313	1.00	2	6	3	6	3	0.02	313
	313	1.65	1	8	8	13	13	0.03	509
Total	313	1.35½	3	14	6	19	6	0.05	436
Engineers, stationary.....	313	1.50	1	58	58	86	86	0.10	464
	313	2.00	1	219	219	416	416	0.70	593
Total	313	1.81	2	277	139	502	251	0.89	567
Foreman.....	313	3.83½	1	313	313	1,200	1,200	1.00	1,200
Foreman, assistant	313	1.50	1	219	219	342	342	0.70	430
Laborers.....	313	1.00	4	83	21	66	22	0.27	317
	313	1.10	3	44	15	49	16	0.14	349
	313	1.15	3	36	12	42	14	0.12	365
	313	1.25	48	1,440	30	1,803	38	4.60	393
Total	313	1.23½	58	1,605	28	1,980	34	5.13	386
Levellers	313	1.65	2	207	104	340	170	0.66	514
Loaders	313	.75	1	8	8	6	6	0.03	235
	313	1.00	1	13	13	13	13	0.04	313
	313	1.10	13	206	16	228	18	0.66	346
	313	1.25	12	510	43	637	53	1.63	391
Total	313	1.20	27	737	27	884	33	2.36	375
Mason.....	313	3.50	1	19	19	66	66	0.06	1,067
Watchman.....	365	1.25	1	60	60	66	66	0.19	436

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

V.—Coke: UNITED STATES—Concluded.

ESTABLISHMENT No. 28—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Water boys.....	313	\$0.50	2	105	53	\$62	\$26	0.24	\$153
	313	.75	2	91	46	72	26	0.29	245
Total	313	.63½	4	196	49	124	31	0.63	196
The establishment.....		1.30½	163	7,038	43	9,808	61	22.47	436

ESTABLISHMENT No. 29.

Chargers.....	365	\$1.20	4	1,226	337	\$1,471	\$368	3.36	\$432
Drawers.....	365	1.20	18	4,752	264	5,762	317	13.02	422
Engineer, stationary	365	1.06	1	201	201	316	316	0.83	203
Foreman.....	365	2.00	1	264	264	728	728	1.00	730
Laborers.....	365	1.10	10	572	57	629	63	1.57	461
Mason.....	313	2.50	1	32	32	111	111	0.10	1,006
Repairer, oven.....	313	1.50	1	292	292	437	437	0.92	460
Watchman.....	365	1.20	1	328	328	394	394	0.90	422
The establishment		1.24½	37	7,867	213	a 9,788	265	21.70	451

W.—Coke: CONTINENT OF EUROPE.

ESTABLISHMENT No. —.

[No statement of cost of production for this establishment is shown in Table IX.]

Boiler washer	365	\$0.46½	1	63	63	\$30	\$30	0.17	\$174
Boilermaker.....	365	1.00	1	2	2	2	2	0.01	263
Carpenters	365	.83	2	6	3	5	3	0.02	304
Chargers.....	365	.25	1	238	238	59	59	0.65	96
	365	.86½	1	276	276	101	101	0.76	124
	365	.52	1	73	73	38	38	0.20	190
	365	.68½	3	1,014	338	687	229	2.78	247
Total.....	365	.55½	6	1,601	267	885	148	4.39	202
Cleaner.....	365	.31	1	53	53	16	16	0.15	110
Coke screener and laborer....	365	.52	1	340	346	180	180	0.95	190
Danbers.....	365	.29	2	675	338	189	95	1.85	162
Engineer.....	365	.34½	1	317	317	108	108	0.87	124
Fireman.....	365	.50	1	377	377	187	187	1.03	181
Forkers.....	365	.68½	3	1,007	330	690	230	2.76	250
Laborers	365	.32	7	532	76	170	24	1.46	117
Laborer and mason	365	.66½	1	3	3	2	2	0.01	243
Leveller.....	365	1.37	1	304	304	417	417	0.63	501
Loaders.....	365	.31	13	1,668	128	515	40	4.57	112
	365	.34	1	340	340	115	115	0.93	122
	365	.48½	1	6	6	3	3	0.02	183
	365	.58	1	12	12	7	7	0.03	213
	365	.69	1	337	337	233	233	0.92	252
Total.....	365	.37	17	2,263	139	873	51	6.47	135

a In addition \$668 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 236.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

W.—Coke: CONTINENT OF EUROPE—Concluded.

ESTABLISHMENT No. 4.—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.
				Total.	Aver- age.	Total.	Aver- age.	
Machinist	365	\$1.06	1	36	36	\$30	\$30	0.08
Mason	365	.89	1	18	18	15	15	0.05
Messenger	365	.62	1	264	264	153	153	0.41
Pickers	365	.19	2	238	169	66	33	0.07
Porter	365	.44	1	309	309	137	137	0.25
Watchman	365	.89	1	365	365	141	141	1.09
Water tenders	365	.25	3	150	50	38	13	0.41
Weightmen	365	.65	1	19	19	11	9	0.05
	365	.67	1	19	19	11	12	0.05
Total	365	.58	2	38	19	23	11	0.16
The establishment .....		.47	57	9,191	161	4,354	76	25.20

X.—Iron Ore: UNITED STATES.

ESTABLISHMENT No. 1.

Blacksmiths	312	\$2.00	2	157	79	\$314	\$157	0.50	3025
Blacksmith and laborer	312	1.50	1	2	2	3	3	0.01	470
Blacksmiths' helper	312	1.00	1	28	28	44	44	0.09	492
Car leveller	312	1.25	1	182	182	227	227	0.50	500
Carpenters	312	2.00	3	175	88	350	175	0.50	626
	312	2.35	1	21	21	46	46	0.07	680
Total	312	2.02	3	190	83	396	172	0.63	632
Clerks and weighmen	365	1.47	2	315	158	463	232	0.66	596
	365	1.54	1	117	117	177	177	0.32	543
	365	1.66	1	112	112	186	186	0.31	607
	365	1.85	1	223	223	432	432	0.64	677
Total	365	1.62	6	778	126	1,206	292	2.13	601
Drivers	312	.75	7	836	94	402	70	2.10	225
	312	.92	1	164	164	170	170	0.69	260
	312	1.00	6	676	112	686	114	2.16	318
	312	1.12	1	11	11	12	12	0.61	341
	312	1.25	15	1,040	70	1,304	87	2.35	360
Total	312	1.03	30	2,576	86	2,664	80	2.24	384
Driver and laborer	312	1.12	1	6	6	11	6	0.03	253
Engineers	312	2.00	2	266	142	572	286	0.91	636
Engineer and laborer	312	1.51	1	78	78	115	115	0.24	474
Fireman	312	1.25	1	30	30	48	48	0.12	393
Laborers	312	.50	1	2	2	1	1	0.01	157
	312	1.00	12	420	35	422	36	1.34	315
	312	1.10	6	126	14	145	24	0.40	380
	312	1.25	114	2,551	22	2,187	28	8.13	611
	312	1.50	1	200	200	320	320	0.67	482
Total	312	1.23	134	2,306	25	4,065	30	10.67	387
Laborers and timbermen	312	1.33	2	316	158	422	211	1.01	416
Laborer and trimmer	312	1.40	1	10	10	14	14	0.02	436
Mine boss	365	2.50	1	263	263	1,300	1,300	1.00	1,300
Miners	312	(a)	(b)	(a)	(a)	24,827	(b)	(a)	(a)

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
 b Number of employees not given.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 12—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.						Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployee.	Conse- quent average earnings per em- ployee.	
				Total.	Aver- age.	Total.	Aver- age.			
Masons	313	\$3.20	1	8	8	\$16	\$16	0.02	\$1,082	
	313	4.00	1	16	10	40	40	0.03	1,332	
Total	313	3.724	2	16	8	56	28	0.05	1,180	
Mine boss	313	4.79	1	313	313	1,500	1,500	1.00	1,800	
Miners	313	2.17	9	863	96	1,815	213	2.62	679	
	313	2.37	75	12,904	172	30,520	408	61.23	742	
	313	2.824	11	1,175	107	2,968	279	2.78	790	
	313	2.05	1	20	20	61	61		963	
Total	313	2.37	96	14,862	184	35,332	379	47.86	742	
Pit bosses	313	2.50	2	600	300	1,408	740	1.91	793	
Pumpmen	313	1.80	2	872	336	1,225	613	2.15	871	
Timbermen	313	1.83	2	315	158	680	293	1.01	680	
	313	2.36	1	237	237	567	537	0.76	730	
Total	313	2.07	2	552	184	1,143	361	1.77	648	
Water boys	313	1.20	2	405	208	708	354	1.90	373	
The establishment		2.672	268	32,313	122	84,084	253	103.25	648	

ESTABLISHMENT No. 41.

Blacksmith	313	\$2.03	1	313	313		\$636	1.00	\$636	
	313	1.06	1	47	47	48	48	0.15	320	
Blacksmith's helpers	313	1.25	1	102	102	127	127	0.33	390	
Total	313	1.172	2	149	73	175	58	0.48	306	
Brakeman	313	1.80	1	62	63	95	95	0.20	473	
Carpenter	313	2.00	1	47	47	93	93	0.15	619	
Carpenter and engineer	313	1.60	1	65	65	104	104	0.21	391	
Conductor	365	1.843	1	336	336	535	535	0.80	590	
Engineers	365	1.314	1	361	361	474	474	0.90	479	
	313	1.25	1	272	272		302	0.67	417	
	313	1.50	1	112		149	149	0.36	468	
	313	1.60	1	302	302	462	462	0.90	500	
Total	360	1.42	4	1,048	262	1,497	272	2.18	480	
Engineers and miners	313	1.224	2	246	123	301	151	0.79	383	
Fireman and miner	313	1.35	1	232	232	313	313	0.74	423	
Mine boss	313	2.00	1	301	301	601	601	0.90	625	
Miners	313	.90	3	300	121	324	100	1.18	278	
	313	1.00	17	1,175	60	1,211	71	2.75	323	
	313	1.10	127	14,330	106	15,622	116	46.43	241	
	313	1.15	1	277	277	323	323	0.58	363	
Total	313	1.06	158	16,386	104	17,604	112	52.76	320	
Miner and weighman	313	1.18	1	207	207	244	244	0.80	300	
Stableman	305	.904	1	234	354	248	243	0.97	326	

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS.—Continued.

X.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 41—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dis- turb- ance em- ploy- ed.	Days of work done.		Earnings.		Neces- sary em- ployed.	Conse- quent average earnings per em- ployed.
				Total.	Aver- age.	Total.	Aver- age.		
Water boys.....	313	\$0.55	2	301	100	\$105	\$55	0.96	\$172
	313	.75	2	324	103	261	126	1.04	252
Total	313	.604	5	625	125	416	83	2.00	300
Weighman	313	1.80	1	190	190	208	208	0.61	401
The establishment.....		1.134	151	20,506	113	23,357	120	65.10	583

ESTABLISHMENT No. 42.

Blacksmiths.....	313	\$1.05	6	1,324	254	\$2,515	\$410	4.57	\$937
	313	2.80	3	913	306	2,395	785	2.00	785
Total.....	313	1.97	9	2,442	271	4,810	534	7.06	677
Blacksmith and blacksmiths' helper.	313	1.474	1	264	264	300	300	0.26	602
Blacksmiths' helpers	313	1.36	1	301	301	406	406	0.26	672
	313	1.40	1	305	306	427	427	0.27	630
	313	1.50	1	300	300	445	445	0.26	600
Total	313	1.414	3	906	302	1,581	457	2.20	453
Brakemen	313	1.50	3	815	305	1,574	453	2.25	470
Carpenters	313	1.50	2	474	237	672	306	1.15	603
	313	1.00	2	362	181	913	459	1.26	604
Total	313	1.534	4	906	149	1,583	357	1.13	607
Conductor	313	1.974	1	373	373	600	600	1.26	600
Driller.....	313	1.25	1	78	78	37	37	1.26	500
Drillers and miners.....	313	1.944	20	4,771	154	7,113	307	14.25	604
	313	1.00	2	377	136	623	171	1.15	300
Total	313	1.564	22	1,142	139	7,736	357	14.11	607
Drillers helpers	313	1.20	2	177	106	107	106	1.26	133
Drivers	313	.45	1	104	104	40	40	1.45	104
	313	.35	4	104	104	104	104	1.45	104
	313	.35	4	104	104	104	104	1.45	104
	313	.35	4	104	104	104	104	1.45	104
	313	.35	4	104	104	104	104	1.45	104
	313	.35	4	104	104	104	104	1.45	104
	313	.35	4	104	104	104	104	1.45	104
	313	.35	4	104	104	104	104	1.45	104
Total	313	.35	4	104	104	104	104	1.45	104
Drillers and miners.....	313	1.17	2	63	100	60	100	1.15	100
Engineers	313	1.20	6	1,775	175	1,607	40	1.15	600
	313	1.20	6	1,775	175	1,607	40	1.15	600
Total	313	1.18	7	1,775	175	1,607	40	1.15	600
Engineer, air compressor ...	305	1.25	1	271	271	111	111	1.25	111
Engineer, locomotive.....	313	1.50	1	271	271	111	111	1.25	111

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 42—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.
				Total.	Aver- age.	Total.	Aver- age.	
Engineers, stationary.....	313	\$1.00	1	300	300	\$285	\$285	0.96
	313	1.50	2	675	338	1,015	507	2.16
	313	1.75	1	330	330	550	550	1.02
Total	313	1.43	4	1,205	324	1,850	464	4.14
Engineer and miner	313	1.45	1	301	301	439	439	0.96
Firemen.....	313	1.50	2	623	312	828	414	1.99
	313	1.60	4	979	245	1,573	393	3.13
Total	313	1.54	6	1,602	267	2,501	417	5.12
Fireman, locomotive.....	313	1.50	1	299	299	447	447	0.95
Firemen and miners.....	313	1.44	3	762	254	1,015	339	2.24
Foremen	313	1.70	1	316	316	533	533	1.01
	313	1.75	2	690	345	1,040	520	1.90
	313	1.91	7	1,308	273	2,059	523	3.10
Total	313	1.83	10	2,324	282	3,232	623	9.01
Foreman, carpenters.....	313	2.75	1	287	287	790	790	0.92
Foremen, miners.....	313	1.65	1	291	291	481	481	0.93
	313	1.92	2	620	310	1,189	595	1.98
Total	313	1.88	3	911	304	1,670	557	2.91
Foreman and miner.....	313	1.47	1	284	284	418	418	0.91
Laborers.....	313	1.15	133	11,088	83	13,806	97	33.35
Laborer, machine shop.....	313	1.38	1	290	290	309	309	0.96
Laborers and miners.....	313	1.23	34	6,094	203	8,486	219	22.03
Machinists.....	313	1.70	1	312	312	530	530	1.00
	313	1.75	1	306	306	536	536	0.98
	313	2.00	1	303	303	606	606	0.97
	313	2.25	1	309	309	693	693	0.98
	313	2.50	1	321	321	803	803	1.03
Total	313	2.04	5	1,550	310	3,188	634	6.40
Machinists' helper.....	313	1.30	1	313	313	406	406	1.00
Masons.....	313	1.90	2	51	26	101	51	0.16
Miners.....	313	1.35	283	38,080	149	52,584	201	124.70
Miner and wagonmaker.....	313	1.45	1	206	206	424	424	0.95
Miner and watchman.....	313	1.24	1	240	240	423	423	1.09
Moulder.....	313	2.25	1	279	279	627	627	0.89
Moulder's helper.....	313	1.15	1	302	302	361	361	0.87
Nearlemen.....	313	1.45	3	852	284	1,228	409	2.73
Patternmaker.....	313	2.00	1	302	302	605	605	0.96
Stevemen.....	313	1.35	4	1,322	331	1,807	452	4.26
Stable boys.....	365	1.50	1	261	261	543	543	0.90
Stable boys.....	365	.40	1	60	60	25	25	0.16
	365	.75	2	216	108	237	119	0.87
Total	365	.70	3	376	125	263	87	1.03
Stablemen.....	365	1.15	7	1,446	207	2,132	305	3.00
Stonecutter and whitewasher.....	313	1.61	1	294	294	472	472	0.94
Timbermen.....	313	1.36	2	675	288	728	364	1.84
Timberman, boss.....	313	2.00	1	273	273	545	545	0.87
Tool boys.....	313	.45	2	344	172	155	78	1.10
	313	.55	4	611	228	500	125	2.91
	313	.75	3	896	302	680	227	2.60
	313	.85	2	250	125	302	151	1.12
Total	313	.68	11	2,611	329	1,490	368	8.03

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 42—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Wagonmakers	813	\$1.00	1	206	206	\$443	\$443	0.95	\$468
	813	1.00	1	288	288	460	460	0.92	500
Total	813	1.544	2	584	202	903	452	1.87	484
Watchmen	365	1.15	2	609	305	706	353	1.67	423
Water boys	313	.40	3	17	9	7	4	0.05	139
	813	.45	24	4,061	109	1,829	76	12.97	141
	813	.35	4	872	218	479	120	2.79	172
Total	813	.47	20	4,950	165	2,315	77	15.81	168
Whitewasher	813	2.25	1	11	11	25	25	6.04	711
The establishment		1.31	640	106,551	165	6128,491	216	325.61	413

ESTABLISHMENT No. 43.

Blacksmiths	813	\$1.00	2	401	202	\$246	\$223	1.29	\$260
Carpenter	813	1.50	1	172	172	257	257	0.56	460
Drill boys	313	.30	4	256	64	135	34	0.22	165
	313	.75	1	44	44	28	28	0.16	213
	313	.20	2	121	61	26	26	0.23	234
Total	313	.63	7	421	90	286	88	1.25	188
Engineers	313	1.45	1	128	128	138	138	0.13	479
	313	1.67	1	128	128	21	21	0.14	513
	313	1.20	1	4	4	4	4	1.11	62
Total	313	1.32	3	260	26	262	163	1.11	67
Miners	313	1.30	126	2,524	13	2,524	13	1.11	159
	313	1.30	126	2,524	13	2,524	13	1.11	159
	313	1.30	126	2,524	13	2,524	13	1.11	159
Total	313	1.32	126	2,524	13	2,524	13	1.11	67
Fire workers	313	1.30	3	2,524	13	2,524	13	1.11	159
	313	1.30	3	2,524	13	2,524	13	1.11	159
	313	1.30	3	2,524	13	2,524	13	1.11	159
Total	313	1.32	3	2,524	13	2,524	13	1.11	67
Fire workers and fire men	313	1.30	1	181	181	181	181	1.11	159
Fire men	313	1.30	22	181	181	181	181	1.11	159
	313	1.30	22	181	181	181	181	1.11	159
Total	313	1.32	23	181	181	181	181	1.11	67
Fire men	313	1.30	1	181	181	181	181	1.11	159
	313	1.30	1	181	181	181	181	1.11	159
Total	313	1.32	2	181	181	181	181	1.11	67
Fire men	313	1.30	23	181	181	181	181	1.11	159
	313	1.30	23	181	181	181	181	1.11	159
Total	313	1.32	25	181	181	181	181	1.11	67
The establishment		1.31	224	106,551	165	6128,491	216	325.61	413

A full statement of the work done by the men in the establishment of the Iron Ore Company of the United States, and of the earnings of the men, is given in the following table. The work done by the men is given in the first column, and the earnings of the men in the second column. The work done by the men is given in the first column, and the earnings of the men in the second column. The work done by the men is given in the first column, and the earnings of the men in the second column.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 44.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployees.	Conse- quent average earnings per em- ployee.
				Total.	Aver- age.	Total.	Aver- age.		
Carpenter	217	\$1.38	1	177	177	\$239	\$239	0.83	\$239
Drivers	217	1.25	4	513	128	641	160	2.36	271
Manager	217	2.50	1	219	219	547	547	1.01	543
Miners	217	1.25	24	4,075	170	5,094	212	18.78	271
Ore raisers	217	1.35	7	1,298	185	1,750	250	5.97	293
Water boy	217	.75	1	210	210	157	157	0.97	163
The establishment .....	.....	1.30	38	6,490	171	8,428	222	29.91	283

ESTABLISHMENT No. 45.

Blacksmith	313	\$2.50	1	153	153	\$376	\$376	0.49	\$700
Blacksmith's helpers	313	1.75	2	237	119	415	208	0.76	548
Carpenter	313	2.00	1	292	292	583	583	0.93	635
Drivers	313	.70	2	323	163	233	117	1.04	224
	313	1.25	4	508	150	748	187	1.91	392
	313	1.30	2	123	62	161	81	0.39	410
	313	1.50	11	532	48	793	72	1.70	467
	313	1.62	2	617	309	1,000	500	1.97	507
Total	313	1.334	21	2,195	108	2,935	140	7.01	419
Drivers and miners	313	1.504	2	177	89	277	130	0.57	490
Dumpers	313	1.50	10	1,092	109	1,639	164	3.49	470
Dumpers and miners	313	1.55	3	349	116	541	180	1.12	485
Engineer	313	2.25	1	300	300	810	810	1.15	704
Firemen	313	1.65	1	205	205	435	435	0.85	514
	313	1.75	2	406	203	710	355	1.30	547
Total	313	1.704	3	671	234	1,145	382	2.15	534
Foreman	313	2.30	1	313	313	720	720	1.00	720
Miners	313	1.35	1	35	35	47	47	0.11	420
	313	1.50	9	892	99	1,339	149	2.85	470
	313	1.62	103	23,397	121	37,863	196	74.75	507
Total	313	1.614	203	24,324	120	39,249	193	77.71	565
Miners and ore cleaners	313	1.56	4	378	95	590	148	1.21	489
Miner and stableman	313	1.37	1	25	25	34	34	0.08	420
Miners' helpers	313	.60	1	53	53	32	32	0.17	189
	313	.70	1	212	212	145	145	0.68	214
Total	313	.67	2	265	133	177	89	0.85	209
Ore cleaners	313	1.50	0	548	61	823	91	1.75	470
Pipe man	313	1.75	1	72	72	126	126	0.23	548
Stablemen	313	.70	2	372	186	255	128	1.19	215
Teamsters (with teams)	313	3.00	4	58	15	173	43	0.19	934
Timbermen	313	1.89	3	497	166	939	313	1.59	801
Watchmen	313	1.65	2	615	308	1,015	508	1.96	517
The establishment .....	.....	1.60	276	32,393	120	52,823	191	105.43	501

a In addition, 21 or more contractors were employed, each of whom agreed to get out ore on cars at \$1.10 per ton and was credited at the end of each month with the tonnage mined. His men were paid each month by the company and their wages are included in the above. The wages so paid were deducted from the contractor's gross earnings and the remainder was paid to him as his profit. These profits, not appearing here, are included, of course, in the statement for this establishment on page 252.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 42—Concluded.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employes.	Days of work done.		Earnings.		Necessary employes.
				Total.	Average.	Total.	Average.	
Wagonmakers	313 313	\$1.80 1.80	1 1	206 288	206 288	\$443 460	\$443 460	0.86 0.92
Total	313	1.84½	2	584	292	903	452	1.87
Watchmen	305	1.15	2	609	305	706	353	1.87
Water boys	313 313 313	.46 .45 .55	2 24 4	17 4,061 872	9 169 218	7 1,829 479	4 78 129	0.05 12.97 2.79
Total	313	.47	30	4,950	165	2,315	77	15.81
Whitewasher	313	2.25	1	11	11	25	25	0.94
The establishment		1.81	640	106,551	163	\$138,491	216	\$30.61

ESTABLISHMENT No. 43.

Blacksmiths	313	\$1.00	2	401	202	\$646	\$323	1.29	\$509
Carpenter	313	1.50	1	172	172	257	257	0.86	408
Drill boys	313 313 313	.50 .75 .80	4 1 2	256 44 121	64 44 61	135 33 98	34 33 40	0.83 0.14 0.33	163 235 254
Total	313	.63	7	421	60	296	36	1.25	198
Engineers	313 313 313	1.40 1.67 2.00	1 1 1	226 25 4	226 25 4	329 41 8	329 41 8	0.73 0.68 0.01	479 812 828
Total	313	1.53	3	256	85	388	129	0.41	478
Miners	313 313 313	1.20 1.30 1.40	38 148 2	864 10,053 416	23 74 208	1,045 14,241 878	28 96 288	2.76 35.00 1.23	879 407 423
Total	313	1.29½	188	12,236	65	15,862	84	33.09	408
Ore sorters	313 313 313	1.30 1.40 1.50	3 2 2	835 307 345	278 151 116	1,097 459 514	306 215 171	2.67 0.98 1.10	411 427 408
Total	313	1.37	8	1,487	186	2,040	236	4.75	429
Ore sorter and pit boss	313	1.51	1	223	223	335	335	0.71	473
Pit bosses	313 313 313	1.50 1.60 1.70	2 4 1	280 842 287	140 161 287	481 1,023 487	216 256 487	0.89 2.05 0.92	483 499 531
Total	313	1.60½	7	1,309	173	1,941	277	2.80	503
Stablemen	313 313	1.20 1.30	4 1	83 69	21 69	101 76	25 75	0.27 0.19	381 398
Total	313	1.24	6	142	28	176	35	0.46	383
Strikers	313	1.20	36	3,714	109	4,823	142	11.87	408
Truckmen	313	1.20	6	449	75	544	91	1.43	379
The establishment		1.31½	203	20,710	79	\$27,278	111	\$6.17	412

* In addition, \$1,004 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 252 and 504.

† In addition, \$1,601 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 252 and 504.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 31—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Laborer and timberman	313	\$1. 19	1	16	16	\$19	\$19	0. 03	\$372
Mine boss	313	2. 30	1	286	286	660	660	0. 91	722
Mine boss, assistant	313	1. 34	1	286	286	383	383	0. 91	421
Miners.....	313	1. 56½	22	2, 503	114	3, 913	178	8. 00	489
	313	1. 84½	9	1, 135	126	2, 092	232	3. 63	577
	313	2. 02½	3	506	169	1, 024	341	1. 62	633
Total	313	1. 60½	34	4, 144	122	7, 029	207	13. 25	531
Teamsters	313	1. 00	4	463	116	463	116	1. 48	313
Timbermen.....	313	1. 40	2	236	128	353	177	0. 82	432
Water boy.....	313	. 50	1	63	68	34	34	0. 22	157
Weighman.....	313	1. 16	1	286	286	332	332	0. 91	363
The establishment.....		1. 33	110	11, 088	101	a 14, 749	134	35. 42	416

ESTABLISHMENT No. 36.

Carpenters	313	\$1. 00	1	66	66	\$66	\$66	0. 21	\$313
	313	1. 25	1	223	223	279	279	0. 71	392
	313	1. 19½	2	289	145	345	173	0. 92	374
	313	. 50	1	15	15	8	8	0. 05	167
Driver.....	313	. 50	1	15	15	8	8	0. 05	167
Engineers	365	1. 05	1	365	365	383	383	1. 00	383
	365	1. 20	1	365	365	438	438	1. 00	438
Total	365	1. 12½	2	730	365	821	411	2. 00	411
Foremen.....	313	1. 50	2	306	153	459	230	0. 98	470
Landers	313	1. 07½	3	80	27	86	29	0. 26	336
Lander and miner	313	1. 06½	1	214	214	228	228	0. 68	323
Mine boss	365	2. 63	1	365	365	960	960	1. 00	960
Miners	313	1. 10	1	8	8	9	9	0. 03	352
	313	1. 25	14	1, 524	109	1, 896	135	4. 87	389
	313	1. 35	1	139	139	188	188	0. 44	423
Total	313	1. 25½	16	1, 671	104	2, 093	131	5. 34	392
State picker	313	. 67½	1	96	96	64	64	0. 31	209
Timberman.....	313	1. 25	1	175	175	217	217	0. 56	388
Truckmen	313	1. 10	8	109	14	120	15	0. 25	345
	313	1. 15	2	110	55	127	64	0. 35	961
Total	313	1. 13	10	218	23	247	25	0. 70	353
Washermen	313	1. 00	1	267	267	267	267	0. 85	313
	313	1. 10	1	151	151	160	160	0. 48	332
Total	313	1. 02	2	418	209	427	214	1. 23	320
The establishment.....		1. 30	42	4, 578	109	b 5, 955	142	14. 13	421

a The earnings here shown are for one year. The statements for this establishment on pages 253 and 595 are for nine months only.

b In addition \$433 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 253 and 595.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 46.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ-ees.	Days of work done.		Earnings.		Necessary employ-ees.
				Total.	Average.	Total.	Average.	
Bankmen	313	\$1.20 ¹	40	8,040	151	\$7,682	\$187	19.30
Blacksmiths and blacksmiths' helpers	313	2.79	8	870	290	1,558	519	2.78
Brakemen	313	1.20	5	1,060	213	1,378	276	2.39
Carpenters	313	2.03	4	864	216	1,752	428	2.76
Drill sharpeners	313	1.68	4	858	215	1,441	260	2.74
Drillers	313	1.89 ¹	18	2,253	125	3,794	207	7.20
Drillers' helpers	313	1.48	14	2,274	162	3,183	227	7.27
Engineers and machinists	313	2.80	4	1,132	283	2,943	736	8.82
Firemen	313	1.55	4	1,105	276	1,712	428	8.53
Foremen, miners	313	2.12 ¹	5	7,154	281	2,455	491	8.00
Leadors	313	1.81 ¹	22	4,745	216	5,761	263	15.16
Masons and painters	313	2.54	9	809	90	2,035	228	2.58
Miners	313	1.40 ¹	125	25,398	168	35,008	264	81.10
Watchman	365	1.55	1	350	350	550	550	0.90
The establishment		1.47	308	48,909	182	\$ 72,018	200	156.10

ESTABLISHMENT No. 48.

Blacksmith	313	\$1.70	1	271	271	\$461	\$461	0.87	9632
Drivers	313	1.35	3	878	193	780	280	1.85	422
Laborers	313	.86	2	271	180	254	127	0.87	283
	313	1.30	29	1,641	68	1,823	65	5.88	810
Total	313	.96 ¹	31	2,112	68	2,677	67	6.75	308
Mine boss	313	1.72 ¹	1	313	313	546	546	1.90	540
Miners	313	1.43 ¹	16	1,940	113	2,688	165	5.88	449
	313	1.61	6	396	66	638	106	1.27	504
	313	1.87	3	23	8	43	16	0.07	685
	313	2.09	2	124	67	230	140	0.43	684
	313	2.06	1	2	2	6	6	0.01	899
Total	313	1.60 ¹	28	2,205	80	3,065	129	7.08	471
Water boy	313	.78	1	136	136	86	93	0.43	214
The establishment		1.20	65	5,805	80	\$ 7,556	116	12.26	407

ESTABLISHMENT No. 51.

Blacksmith	313	\$1.53	1	230	230	\$372	\$372	0.73	9493
Driver	313	1.18	1	309	309	355	355	0.99	308
Dumper	313	1.28	1	185	185	224	224	0.50	379
Laborers	313	.95	21	1,017	48	980	47	5.25	503
	313	1.00	38	3,015	64	3,062	82	8.62	312
	313	1.05	8	521	164	541	108	1.06	325
Total	313	.99 ¹	63	4,553	79	4,923	73	14.54	311

¹ Includes \$1,227 expended for permanent improvements, which could not be eliminated from the different occupations given above.

² The earnings here shown are for one mine only. The statement for this establishment on page 320 is for two mines.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 61—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- ees.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Washerman	155	\$1.10	1	121	121	\$133	\$133	0.78	\$170
The establishment.....	.....	1.15	45	2,748	61	\$3,152	70	17.71	178

ESTABLISHMENT No. 64.

Engineers	155	\$1.15	2	304	152	\$353	\$177	1.98	\$180
Mine bosses	155	1.15	1	155	155	180	180	1.00	180
	181	1.31½	1	181	181	240	240	1.00	210
Total	168	1.25	2	336	168	420	210	2.00	210
Miners	155	.60	4	282	71	173	43	1.82	95
	155	.80	32	2,051	64	1,649	52	12.22	125
	155	.90	4	463	116	415	104	2.09	139
	155	1.00	5	395	79	395	79	2.55	153
Total	155	.82½	45	3,191	71	2,632	58	20.59	128
Miner and ore cleaner	155	.67	1	85	85	57	57	0.55	104
Ore cleaners	155	.30	1	39	39	12	12	0.25	48
	155	.40	2	60	30	24	12	0.39	62
	155	.50	1	14	14	7	7	0.09	78
	155	.60	1	77	77	46	46	0.50	92
Total	155	.47	5	120	28	89	18	1.23	72
The establishment.....	.....	.86½	55	4,106	75	\$3,551	65	26.83	125

ESTABLISHMENT No. 69.

Bankmen	313	\$1.25	1	68	68	\$83	\$83	0.21	\$304
	313	1.35	1	256	256	345	345	0.82	422
	313	1.75	2	189	95	331	166	0.60	548
Total	313	1.48½	4	511	128	759	199	1.68	466
Blacksmith	313	1.56	1	234	234	363	363	0.75	468
Brakemen	313	1.35	2	534	267	721	361	1.71	422
Bricklayers	313	3.00	5	89	18	268	53	0.28	875
Carpenters	313	1.25	2	178	89	222	111	0.57	390
Engineer	313	2.30	1	313	313	720	720	1.09	720
Firemen	313	1.56	2	525	263	831	416	1.68	495
Fireman and pumpman.....	313	1.39	1	158	158	220	220	0.50	438
Foreman, track	313	1.25	1	61	61	76	76	0.19	300
Mine boss.....	313	2.30	1	313	313	720	720	1.00	720
Masons	313	.67	1	52	52	36	36	0.17	213
	313	.75	5	85	17	65	13	0.27	252
	313	.90	17	809	48	731	43	2.58	263
	313	1.00	117	8,198	70	8,189	70	26.19	312
	313	1.12	8	1,933	242	2,146	268	6.18	347
Total	313	1.00½	148	11,078	75	11,147	75	25.39	315

a In addition \$46 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 252 and 595.

b In addition \$102 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 252 and 595.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 59.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate accorded to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Diff. percent unemploy- ed.	Days of work done.		Earnings.		Necessary employ- ment.
				Total.	Average.	Total.	Average.	
Blacksmiths.....	313	\$1.20	3	349	125	\$394	\$143	0.80
Blacksmith and truckman.....	313	1.12½	1	113	113	127	127	0.36
Engineers.....	313	1.00	2	738	246	735	245	2.26
	313	1.25	1	27	27	34	34	0.68
Total.....	313	1.00½	4	765	191	769	193	2.45
Foremen.....	313	1.48	2	439	210	580	294	1.24
	313	1.50	1	24	24	28	28	0.68
Total.....	313	1.46½	3	444	148	624	298	1.42
Foreman and miner.....	313	1.33	1	250	250	345	345	0.83
Landers.....	313	.90	2	451	225	406	308	1.44
Loaders.....	313	.80	1	7	7	4	4	0.98
	313	.63	1	378	278	190	190	0.89
	313	.80	1	100	100	81	81	0.82
	313	.90	2	43	22	29	20	0.14
	313	.95	2	567	294	542	271	1.81
Total.....	313	.88	7	995	142	856	123	3.18
Miners.....	313	.80	1	105	105	94	94	0.34
	313	1.00	2	137	68	139	79	0.44
	313	1.05	3	290	99	311	104	0.95
	313	1.10	6	305	51	337	56	0.58
	313	1.25	10	837	94	1,171	117	2.59
Total.....	313	1.15	22	1,781	81	2,032	92	8.70
Timbermen.....	313	1.65	1	232	232	284	284	0.81
Truckmen.....	313	.90	13	1,517	117	1,371	105	4.86
	313	1.00	3	500	112	544	106	1.79
	313	1.00	3	304	121	284	121	1.19
	313	1.10	1	11	11	12	12	0.04
Total.....	313	.93½	22	2,452	111	2,291	124	7.84
The establishment.....	.....	1.03½	65	7,761	119	8,032	124	24.33

ESTABLISHMENT No. 61.

Carpenters.....	155	\$1.25	2	144	72	\$182	261	0.38
Drivers.....	155	.50	4	83	21	41	10	0.54
Engineers.....	155	1.25	2	270	135	324	167	1.74
Foreman.....	155	1.50	1	154	154	231	231	0.99
Laborer.....	155	1.00	1	3	3	3	2	0.01
Landers.....	155	1.00	2	109	85	110	55	0.70
Miners.....	155	1.25	9	329	39	407	45	2.16
Timberman.....	155	1.25	1	108	108	135	135	0.70
Truckmen.....	155	1.00	3	124	41	175	42	0.86
	155	1.05	2	189	95	200	100	1.22
	155	1.10	13	710	55	783	60	4.68
	155	1.15	4	406	102	469	117	2.62
Total.....	155	1.10½	23	1,429	65	1,577	79	9.22

a In addition \$1.137 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 243 and 305.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

I.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 73—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dis- ferent em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ployee.
				Total.	Aver- age.	Total.	Aver- age.	
Engineers	312	\$1.58	1	24	24	\$36	\$36	0.08
	312	1.60	1	25	25	56	56	0.11
	313	1.80	3	721	244	1,300	453	2.24
	313	2.00	1	283	283	570	570	2.91
	313	2.50	1	290	290	723	723	2.92
Total	312	2.01	7	1,365	195	2,767	392	4.27
Engineer and laborer	312	1.77	1	200	200	354	354	0.64
Fillers	312	1.55	2	21	11	23	17	0.07
	312	1.03	2	63	27	56	43	0.17
	313	1.75	2	253	32	492	56	0.01
	313	1.85	2	58	29	108	54	0.19
	313	1.90	3	276	52	527	176	0.65
	313	1.95	5	556	111	1,090	319	1.78
	313	2.00	3	150	75	290	140	0.48
Total	312	1.88	25	1,398	56	2,623	195	4.48
Firemen	312	1.50	1	252	252	381	381	0.21
	312	1.60	4	400	100	630	160	1.25
	313	1.75	2	313	156	546	273	1.06
	313	2.00	3	747	249	1,480	493	2.35
	313	2.14	1	90	90	212	212	0.32
Total	312	1.80	11	1,810	165	2,267	297	5.80
Fireman and lander	312	1.87	1	156	156	293	293	0.50
Foreman, carpenters	312	1.80	1	311	311	777	777	0.99
Laborers	312	1.00	1	12	12	12	12	0.04
	313	1.25	2	220	100	434	212	1.02
	312	1.45	2	79	39	115	38	0.25
	312	1.60	115	2,738	24	4,122	20	4.75
	312	1.80	10	600	60	1,075	107	3.16
	313	1.65	16	600	60	1,063	103	3.12
	312	1.75	15	819	81	1,610	107	3.94
	312	1.80	7	378	54	878	97	1.20
	312	1.85	11	600	60	1,267	117	3.28
	312	1.90	4	428	107	817	204	1.27
	313	1.95	6	446	74	880	144	1.42
	313	2.00	4	157	39	320	80	0.50
Total	312	1.65	194	8,167	42	13,400	60	26.06
Laborer and mason	312	2.25	1	79	79	177	177	0.35
Laborers and miners	312	1.70	9	743	83	1,311	166	2.27
	313	1.97	1	90	90	195	195	0.17
Total	312	1.78	10	843	84	1,506	151	2.40
Laborers and miners' helpers	312	1.63	2	308	154	503	251	0.90
Laborers and trimmers	312	1.72	1	54	54	93	93	0.17
	313	2.00	1	100	100	212	212	0.32
Total	312	1.94	3	157	70	305	165	0.60
Laborer and watchman	305	1.80	1	267	267	432	432	0.73
Landers	312	1.50	5	737	147	1,108	222	2.35
	312	1.60	3	260	120	500	200	1.15
	312	1.75	3	590	196	1,078	343	1.91
	312	1.80	3	910	303	1,620	543	2.91
	312	1.85	4	1,143	286	2,157	630	3.00
Total	312	1.74	18	2,748	208	4,521	302	11.97

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

I.—Iron Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 69—Continued.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Dis- ferent em- ploy- ee.	Days of work done.		Earnings.		Neces- sary em- ployee.
				Total.	Aver- age.	Total.	Aver- age.	
Pumpmen	313	\$1.25	4	484	109	\$629	\$132	1.29
Timberman	313	1.54	1	34	34	37	37	8.08
Watchman	313	1.00	1	106	106	173	173	8.33
Water boys	313	.50	5	730	146	384	73	2.33
	313	.75	4	222	56	172	43	0.71
Total	313	.864	9	952	106	586	60	2.04
The establishment		1.114	189	15,570	83	17,823	95	49.74

ESTABLISHMENT No. 72.

Blacksmiths	313	\$1.25	1	202	202	\$253	\$253	0.97	\$716
	313	2.54	1	237	237	623	623	0.82	759
Total	313	2.35	2	500	230	1,216	658	1.79	736
Blacksmiths' helpers	313	1.75	2	488	244	888	482	1.96	554
Brakemen	313	1.00	7	790	113	1,270	181	2.52	589
	313	1.65	5	1,336	267	2,330	466	4.27	823
	313	1.75	2	98	49	169	85	0.31	340
	313	1.65	1	178	178	330	330	1.58	367
Total	313	1.064	15	2,400	160	3,090	267	1.58	823
Brakemen and laborers	313	1.64	2	494	247	810	405	1.58	811
Carpenters	313	1.80	1	49	49	87	87	0.16	566
	313	2.00	15	1,310	87	2,818	175	4.19	626
Total	313	1.90	16	1,359	83	2,705	160	4.35	623
Carpenter and laborer	313	1.83	1	29	29	53	53	0.09	572
Carpenter and miner	313	2.034	1	35	35	72	72	0.11	644
Drift-cutters and miners	313	2.18	2	358	179	781	391	1.14	683
	313	2.444	1	104	104	254	254	0.33	770
Total	313	2.344	3	462	154	1,037	346	1.47	709
Drill boys	313	1.25	2	261	131	326	183	0.83	391
Drill runner	313	2.25	1	7	7	16	16	0.02	715
Drillers	313	2.50	1	84	84	292	292	0.27	1,088
Drymen	313	1.25	1	268	268	380	380	0.82	361
	313	1.00	2	480	240	787	379	1.53	494
Total	313	1.454	3	768	256	1,117	372	2.45	1,435
Dumpers	313	1.80	1	199	199	360	360	0.04	568
	313	1.85	5	769	154	1,431	286	2.46	542
	313	1.90	2	338	169	638	319	1.06	501
	313	1.03	4	143	36	278	70	0.46	608
	313	2.00	2	52	26	101	52	0.17	626
Total	313	1.674	14	1,501	107	2,811	201	4.31	586
Dumper and runner's helper	313	1.91	1	80	80	160	160	0.23	580
Dumping clerks	313	2.10	2	206	103	619	309	0.91	979

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—Iron Ore: UNITED STATES—Concluded.

ESTABLISHMENT No. 72—Concluded.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conso- quent average earnings per em- ployé.
				Total.	Aver- age.	Total.	Aver- age.		
Trackmen	313	\$1.90	2	329	160	\$610	\$305	1.03	\$597
	313	2.00	2	111	56	231	111	0.35	623
Total	313	1.93	4	431	108	831	208	1.37	603
Trammers	313	1.50	2	31	16	47	24	0.10	475
	313	1.75	5	188	38	320	64	0.60	533
	313	1.80	3	220	71	396	132	0.70	563
	313	1.85	24	564	24	1,048	44	1.80	582
	313	1.90	23	1,119	49	2,134	93	3.58	597
	313	1.95	18	1,004	56	1,956	109	3.21	610
	313	2.00	18	1,063	59	2,125	118	3.40	626
	313	2.05	1	24	24	49	49	0.08	639
Total	313	1.91½	94	4,213	45	8,075	88	13.47	600
Trimmers	313	1.85	5	110	22	203	41	0.35	578
	313	1.90	3	147	49	279	93	0.47	594
	313	1.95	1	43	43	84	84	0.14	611
	313	2.00	12	1,286	107	2,583	215	4.11	629
	313	2.10	4	641	160	1,342	336	2.05	653
Total	313	2.02	25	2,227	69	4,493	180	7.12	631
Watchman	363	1.50	1	50	50	75	75	0.14	548
The establishment.....	.....	1.95	784	71,296	91	a 138,926	177	227.65	610

Y.—Iron Ore: CONTINENT OF EUROPE.

ESTABLISHMENT No. 76.

Miners	313	\$0.81½	13	3,838	295	\$3,123	\$240	12.26	\$255
	313	1.06½	1	303	303	323	323	0.97	334
Total	313	.83	14	4,141	296	3,446	246	13.23	260
The establishment.....	.....	.83	14	4,141	296	b 3,446	246	13.23	260

ESTABLISHMENT No. 77.

Foreman.....	313	\$0.84	1	117	117	\$98	\$98	0.37	\$263
Laborers.....	313	.56	5	170	34	95	19	0.54	175
Miners.....	313	.65½	1	26	26	17	17	0.08	205
	313	1.02½	11	1,033	94	1,057	96	3.30	321
Total	313	1.01½	12	1,058	68	1,074	90	3.38	318
The establishment.....	.....	.94	18	1,345	75	b 1,267	70	4.29	296

a In addition \$4,275 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 253 and 596.
b The earnings here shown are for only a part of the employés, while the statement for this establishment on page 253 is for the entire number.

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Continued.

X.—from Ore: UNITED STATES—Continued.

ESTABLISHMENT No. 72—Continued.

Occupation.	Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
			Different employ- ees.	Days of work done.		Earnings.		Necessary employ- ees.
				Total.	Average.	Total.	Average.	
Machinist	312	\$2.25	1	312	312	\$1,050	\$1,050	1.00
Masons	312	2.00	1	15	15	45	45	0.06
	312	2.10	1	6	6	19	19	0.02
	312	4.00	3	60	20	230	80	0.19
	312	5.00	1	6	6	30	30	0.02
Total	312	5.35	6	87	15	323	56	0.28
Mine bosses	312	2.75	1	317	317	884	884	1.01
	312	5.25	1	312	312	1,645	1,645	1.00
Total	312	4.01	2	630	315	2,528	1,265	2.01
Mine runner	312	2.10	1	15	15	32	32	0.05
Miners	312	1.70	12	680	67	1,200	161	2.20
	312	1.90	163	18,257	112	85,799	220	58.33
	312	2.12	44	5,600	130	12,145	376	12.21
Total	312	1.90	219	24,644	113	60,193	224	72.74
Miners and pit bosses	312	2.22	6	851	170	1,917	363	2.72
Miners and pumpmen	312	1.40	3	547	274	1,099	545	1.75
Miner and teamster	312	2.11	1	83	83	112	112	0.17
Miners helpers	312	1.00	1	10	10	16	16	0.03
	312	1.75	1	65	55	96	96	0.18
	312	1.80	1	32	32	58	58	0.10
	312	1.85	16	695	43	1,286	76	2.22
	312	1.90	8	500	100	944	189	1.00
	312	1.92	3	513	171	989	330	1.04
	312	1.95	5	822	176	1,725	345	2.82
	312	2.00	2	467	234	831	466	1.42
Total	312	1.91	34	2,164	92	4,046	178	10.02
Pit bosses	312	2.35	11	2,476	225	5,809	528	7.90
Pumpmen	312	1.75	1	298	298	499	499	0.95
	312	1.90	5	751	150	1,439	288	2.40
	312	2.00	1	115	115	230	230	0.37
Total	312	1.88	7	1,164	166	2,168	310	3.72
Ropemen	312	1.75	1	26	26	46	46	0.08
	312	2.00	1	216	216	423	423	0.69
Total	312	1.94	2	242	121	469	235	0.77
Surface boss	312	2.00	1	278	278	557	557	0.89
Teamsters	312	1.95	1	312	312	611	611	1.00
	312	2.50	2	135	68	330	165	0.43
Total	312	2.12	3	447	140	947	316	1.13
Timbermen	312	2.00	20	925	46	1,852	93	2.96
	312	2.10	1	181	181	335	335	0.51
	312	2.25	1	120	120	290	290	0.42
Total	312	2.03	22	1,216	55	2,477	113	3.20
Timberman, boss	312	2.80	1	318	318	898	898	1.92
Timekeepers	312	2.05	2	311	156	630	320	0.99

SUMMARY OF ACTUAL AND THEORETICAL TIME AND EARNINGS.

[In the following table each line will show the total of an occupation in an establishment. In a like occupation the facts for one establishment cannot be compared with those for another (except as to daily rate of pay), unless the periods are of equal length. The establishment numbers relate to the cost of production presentation, Tables I to XI. Where no establishment number is given no statement of cost of production for the establishment was obtained. In referring from this table to those on production by means of these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

TABLE XII.—ACTUAL AND THEORETICAL TIME AND EARNINGS—Concluded.

Y.—Iron Ore: CONTINENT OF EUROPE—Concluded.

ESTABLISHMENT No. 80.

Occupation.	Work- ing days in the period.	Actual daily earn- ings, or daily rate nearest to average daily earn- ings.	Actual condition for period.					Condition if workmen had continuous employment.	
			Dif- ferent em- ploy- és.	Days of work done.		Earnings.		Neces- sary em- ployés.	Conse- quent average earnings per em- ployé.
				Total	Aver- age.	Total	Aver- age.		
Firemen	158	\$0.52	2	318	159	\$171	\$86	2.01	\$85
Foremen.....	158	.95	2	300	150	286	143	1.90	151
Laborers.....	158	.60	3	517	172	313	104	3.27	96
Machinists	158	.74½	2	300	150	223	112	1.90	117
	158	.76	2	300	150	228	114	1.90	120
Total	158	.75	4	600	150	451	113	2.80	119
Mason and miner.....	158	.75	1	147	147	110	110	0.93	118
Miners	158	.71½	181	25,278	140	18,037	100	159.99	113
Ore setters.....	158	.38	2	212	106	80	40	1.34	60
	158	.52½	4	663	166	347	87	4.20	83
	158	.60	2	366	183	220	110	2.32	95
Total	158	.52	8	1,241	155	647	81	7.86	82
Timberman.....	158	.71½	1	156	156	111	111	0.99	112
The establishment.....	.....	.70½	202	28,557	141	a 20,126	100	180.75	111

a The earnings here shown are for six months. The statement for this establishment on page 253 is for three months only.

TIME AND EARNINGS BY OCCUPATIONS.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry as a new series of numbers is used for each.)

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employees.	Days of work done.		Earnings.		Necessary employees.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
313	\$1.50	1	292	292	\$438	\$438	0.33	\$470	1
91	1.28	6	323	54	493	82	2.55	114	2
287	1.75	2	419	209	785	392	1.44	595	3
313	(a)	8	(a)	(a)	165	21	(a)	(a)	4
313	(a)	(b)	(a)	(a)	2,536	(b)	(a)	(a)	5
155	1.42	3	263	88	372	124	1.70	226	6
313	1.87	3	644	213	586	293	2.06	421	7
313	1.47	6	571	95	840	140	1.82	460	8
230	1.55	4	21	5	33	8	0.69	361	9
133	1.67	7	438	63	732	105	3.32	321	10
230	1.60	1	10	10	16	16	0.61	248	11
319	1.64	14	821	60	1,410	102	2.82	346	12
313	1.44	6	845	141	1,218	203	2.70	451	13
155	1.39	2	166	84	140	70	0.70	301	14
313	1.25	2	14	7	14	9	0.04	402	15
313	.48	13	1,700	147	814	70	5.84	154	16
70	.77	2	103	52	79	40	1.70	61	17
49	.70	8	389	48	250	32	7.60	34	18
63	.61	8	406	51	250	31	7.06	34	19
317	1.44	6	515	86	744	124	1.64	452	20
251	2.11	3	420	215	865	483	1.71	529	21
313	.39	2	338	169	121	61	1.08	110	22
313	1.45	1	239	239	347	347	0.78	451	23
313	1.33	1	9	9	12	12	0.03	417	24
313	.66	1	236	236	162	162	0.73	215	25
313	1.32	1	82	82	60	60	0.17	416	26
155	1.25	1	8	8	10	10	0.05	104	27
287	1.81	4	487	122	825	221	1.81	522	28
169	(a)	1	(a)	(a)	57	57	(a)	(a)	29
169	(a)	1	(a)	(a)	233	233	(a)	(a)	30
169	(a)	6	(a)	(a)	598	120	(a)	(a)	31
166	2.00	1	30	30	104	104	0.10	104	32
169	(a)	8	(a)	(a)	279	48	(a)	(a)	33
313	(a)	3	(a)	(a)	2,129	1,040	(a)	(a)	34
280	.61	2	299	149	142	83	1.64	178	35
49	.50	21	503	24	252	12	10.49	24	36
49	(a)	1	(a)	(a)	18	18	(a)	(a)	37
313	1.12	3	2,031	254	2,377	283	6.50	350	38
91	1.38	9	675	75	846	104	7.42	120	39
313	1.30	40	6,040	151	7,092	187	19.80	408	40
313	1.48	4	311	129	750	190	1.03	465	41
77	.64	4	215	54	147	37	2.79	53	42
99	1.11	4	427	707	474	119	4.31	110	43
305	1.40	10	2,555	223	5,015	313	9.74	515	44
365	1.45	1	294	294	427	427	0.81	830	45
365	1.48	5	1,481	298	2,106	429	4.04	841	46
365	1.45	1	284	284	410	410	0.78	520	47
365	1.47	3	760	236	1,182	377	2.11	537	48
156	.85	1	147	147	172	172	0.91	181	49
166	1.08	1	52	52	138	138	0.48	283	50
313	2.38	6	249	42	502	84	0.40	744	51
313	2.87	2	422	211	1,000	500	1.75	742	52
313	2.30	1	509	509	680	680	0.96	649	53
305	2.01	2	298	149	779	389	0.82	954	54
313	2.75	1	504	504	608	608	0.94	860	55
305	1.67	2	458	229	767	384	1.23	811	56
155	2.50	1	166	166	415	415	1.07	328	57
313	2.42	3	824	274	2,251	750	2.95	763	58
313	1.80	1	317	317	601	601	1.61	663	59
104	1.35	1	104	104	141	141	1.00	141	60
184	2.75	3	347	116	988	480	1.00	800	61
305	2.00	2	318	159	635	318	0.67	729	62
313	1.81	2	610	305	1,191	595	1.05	577	63
365	1.50	1	220	220	487	487	0.70	555	64
60	.76	1	74	74	56	56	0.83	68	65
78	.74	2	100	50	739	70	2.38	58	66
78	.77	3	230	77	177	60	2.95	66	67

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
b Number of employees not given.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.					Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.
		Different employées.	Days of work done.		Earnings.		Necessary employées.	Consequent average earnings per em- ployé.	
			Total	Average.	Total	Average.			
78	\$0.79½	4	358	90	\$284	\$71	4.59	962	68
165	2.30	1	108	108	248	248	0.70	356	69
313	2.25	1	136	136	306	306	0.43	704	70
313	2.08½	9	223	25	465	52	0.70	653	71
299	1.63½	4	637	159	1,010	260	2.13	488	72
313	2.25	1	68	68	153	153	0.22	704	73
313	2.43½	5	924	185	2,250	450	2.95	762	74
77	.87½	1	69	69	46	46	0.90	51	75
27	.91½	2	47	24	43	22	1.74	25	76
78	.83	2	150	75	93	47	1.92	48	77
230	2.78½	5	654	131	1,823	365	2.84	641	78
78	.83½	2	134	67	112	56	1.73	65	79
313	1.96½	3	464	155	906	302	1.49	611	80
313	2.99½	5	879	176	2,625	525	2.81	935	81
313	2.56½	4	981	245	2,518	630	3.13	403	82
313	3.00	1	310	310	1,120	1,120	0.90	1,131	83
168	2.78	4	375	94	1,042	261	2.23	467	84
155	2.88	4	282	71	812	203	1.82	446	85
313	3.07½	2	628	314	1,931	966	2.01	962	86
313	2.83½	5	853	171	2,418	484	2.73	887	87
313	.61	27	4,577	170	2,341	87	14.62	160	88
92	1.19	1	92	92	109	109	1.00	109	89
313	.83½	15	4,315	288	2,308	154	13.78	167	90
79	.91½	3	290	97	266	89	3.66	72	91
48	.78½	6	309	52	242	40	6.43	38	92
156	1.26½	4	681	170	861	215	4.35	197	93
53	.74	6	317	53	235	39	5.98	39	94
158	2.00	1	158	158	316	316	1.00	316	95
313	2.40	1	202	202	485	485	0.65	752	96
313	1.83	3	511	170	935	312	1.63	573	97
313	2.25	1	289	289	660	660	0.92	704	98
313	2.15	2	511	256	1,121	561	1.63	687	99
313	2.25	1	307	307	694	694	0.98	708	100
313	2.38	2	429	215	1,020	510	1.37	744	101
313	2.18½	5	661	132	1,445	289	2.11	684	102
313	2.21½	11	1,490	135	3,302	300	4.76	604	103
313	1.23	4	1,043	261	1,335	334	3.33	401	104
91	1.05½	6	470	78	496	83	5.17	96	105
313	1.99	1	228	228	436	436	0.73	599	106
313	2.75	1	201	201	552	552	0.64	860	107
313	2.25	1	200	200	449	449	0.64	703	108
313	2.00	2	157	79	314	157	0.50	626	109
313	2.25	1	296	296	690	690	0.95	730	110
313	2.63	1	813	313	636	636	1.06	636	111
313	1.97	9	2,442	271	4,810	534	7.80	617	112
313	1.60	2	404	202	646	323	1.29	500	113
313	2.50	1	153	153	376	376	0.49	709	114
313	1.70	1	271	271	461	461	0.87	532	115
313	1.58	1	236	236	372	372	0.75	493	116
313	1.20	2	249	125	298	149	0.80	375	117
313	1.56	1	234	234	365	365	0.75	489	118
313	2.36	2	560	280	1,316	658	1.79	736	119
313	1.91½	8	80	10	153	19	0.26	599	120
313	1.96	1	46	46	91	91	0.15	619	121
313	1.47½	1	264	264	390	390	0.84	462	122
313	1.79	3	870	290	1,558	519	2.78	561	123
313	1.33½	1	6	6	8	8	0.02	417	124
313	1.50	1	2	2	3	3	0.01	470	125
313	(a)	1	(a)	(a)	44	44	(a)	(a)	126
313	1.12½	1	113	113	127	127	0.36	352	127
313	1.56	4	211	53	329	82	0.68	488	128
313	1.54	3	561	187	863	288	1.79	481	129
313	1.30	3	312	104	407	136	1.00	408	130
365	1.50	1	291	291	433	433	0.80	543	131
313	1.50	2	308	154	461	231	0.98	468	132
155	1.60	1	177	177	296	296	1.14	250	133
313	1.65½	4	1,168	292	1,932	483	3.73	518	134
184	1.25	4	282	71	353	88	1.53	230	135

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Estab- lish- ment num- ber.	Occupation.	Industry.	Locality.
130	108	Blacksmiths' helpers—concluded	Pig iron	Southern district, U. S.
131	108	do	Pig iron	Southern district, U. S.
132	40	do	Pig iron	Continent of Europe
133	do	do	Pig iron	Continent of Europe
134	8	do	Muck bar iron	United States
135	28	do	Muck bar iron	United States
136	8	do	Finished bar iron	United States
137	1	do	Steel ingots	United States
138	do	do	Steel ingots	Continent of Europe
139	do	do	Steel ingots	Continent of Europe
140	do	do	Steel ingots	Continent of Europe
141	do	do	Steel billets	United States
142	do	do	Steel blooms	United States
143	do	do	Steel rails	Continent of Europe
144	do	do	Mixed iron and steel	United States
145	do	do	Mixed iron and steel	United States
146	do	do	Mixed iron and steel	United States
147	do	do	Mixed iron and steel	United States
148	do	do	Mixed iron and steel	United States
149	do	do	Mixed iron and steel	United States
150	do	do	Mixed iron and steel	United States
151	do	do	Mixed iron and steel	United States
152	do	do	Mixed iron and steel	United States
153	do	do	Mixed iron and steel	United States
154	do	do	Mixed iron and steel	United States
155	do	do	Mixed iron and steel	United States
156	do	do	Mixed iron and steel	United States
157	do	do	Mixed iron and steel	United States
158	do	do	Mixed iron and steel	Continent of Europe
159	107	do	Bituminous coal	United States
160	do	do	Bituminous coal	United States
161	do	do	Bituminous coal	United States
162	170	do	Bituminous coal	Great Britain
163	19	do	Coke	United States
164	23	do	Coke	United States
165	1	do	Iron ore	United States
166	41	do	Iron ore	United States
167	42	do	Iron ore	United States
168	45	do	Iron ore	United States
169	72	do	Iron ore	United States
170	do	Blacksmiths' helper and catcher	Mixed iron and steel	United States
171	do	Blacksmiths' helpers and handlers	Bituminous coal	United States
172	do	Blacksmiths' helper and miler	Bituminous coal	United States
173	do	Blacksmiths' helper and oiler	Mixed iron and steel	United States
174	do	Blacksmiths' helper and pipe fitter	Bituminous coal	United States
175	10	Blacksmiths' helper and stock preparer	Pig iron	Northern district, U. S.
176	38	Blacksmiths' strikers	Pig iron	Great Britain
177	37	do	Pig iron	Great Britain
178	do	do	Mixed iron and steel	Great Britain
179	do	do	Mixed iron and steel	Great Britain
180	do	do	Mixed iron and steel	Great Britain
181	26	Blasters	Bituminous coal	United States
182	do	do	Bituminous coal	United States
183	28	Blasters and drillers	Bituminous coal	United States
184	do	Blasters and head cutters	Bituminous coal	United States
185	28	Blasters and loaders	Bituminous coal	United States
186	26	Blasters and watchmen	Bituminous coal	United States
187	17	Bloom boys	Muck bar iron	United States
188	do	do	Mixed iron and steel	United States
189	do	Bloom tappers	Mixed iron and steel	United States
190	do	Bloomers	Mixed iron and steel	Great Britain
191	do	do	Mixed iron and steel	Great Britain
192	do	do	Mixed iron and steel	Great Britain
193	do	Bloomer and roller	Mixed iron and steel	Great Britain
194	do	Bloomers' helpers	Mixed iron and steel	Great Britain
195	7	Blowers	Steel ingots	United States
196	do	do	Steel ingots	Continent of Europe
197	do	do	Steel ingots	Continent of Europe
198	do	do	Steel ingots	Continent of Europe
199	do	do	Mixed iron and steel	Great Britain
200	1	Blowers, baking flue	Steel ingots	United States
201	1	Blowers, converter	Steel ingots	United States
202	7	Blowers and regulators	Steel ingots	United States
203	do	Bogie boys	Mixed iron and steel	Great Britain
204	20	Bogie men	Finished bar iron	Great Britain

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless, then, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate near est to average daily earnings.	Actual condition for period.				Condition if workman had continuous employment.		Marginal number.	
		Different employees	Days of work done.		Earnings.		Necessary employees.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
365	\$1.00	3	331	179	\$335	\$112	3300	126	
213	1.00	1	381	281	281	281	312	127	
80	.64	1	68	68	44	44	0.76	58	128
78	.46	8	245	83	119	27	3.14	85	129
213	1.40	1	187	187	264	264	0.60	442	130
313	1.50	0	217	26	321	54	0.60	483	131
213	1.42	1	92	93	132	132	0.30	444	132
313	1.50	0	661	144	1,291	216	2.75	490	133
77	.34	1	67	67	23	23	0.87	28	134
27	.62	3	43	22	27	14	1.59	17	135
78	.46	5	322	84	153	31	4.13	38	136
202	1.50	3	187	94	263	142		206	137
230	1.85	4	574	144	1,082	266	2.50	428	138
78	.47	4	231	58	108	27	2.96	30	139
312	1.74	6	1,319	220	2,298	383	4.22	545	140
318	1.50	8	1,360	168	2,147	268	4.30		141
312	1.81	3	917	309	1,684	561	2.90	569	142
100	1.43	10	587	29	815	51	3.37	211	143
135	1.51	11	612	129	972	194	4.18	234	144
313	1.48	3	521	261	776	348	1.60		145
218	1.50	2	685	243	848	424	1.81	470	146
313	.44	9	1,553	173	688	76	4.97	128	147
79	.63	2	63	23	60	20	0.79	50	148
313	1.50	1	182	182	272	272	0.58	470	149
212	1.70	1	10	10	17	17	0.03	832	150
213	1.21	26	1,429	55	1,725	66	4.53	279	151
91	.47	5	407	81	191	38	4.47	43	152
212	1.25	1	202	202	283	283	0.68	390	153
318	1.00	1	17	17	17	17	0.05	213	154
218	1.60	1	28	28	44	44	0.09	492	155
213	1.17	2	149	75	175	88	0.48	368	156
212	1.41	3	903	302	1,281	427	2.80	443	157
213	1.75	2	237	119	416	208	0.70	546	158
312	1.75	2	488	244	863	432	1.50	854	159
313	1.37	1	313	212	291	291	0.06	430	160
213	1.12	2	110	50	121	60	0.87	353	161
218	(a)	1	(a)	(a)	231	231	(a)	(a)	162
318	1.83	1	60	08	104	104	0.22	479	163
213	1.82	1	212	212	390	390	0.68	572	164
305	1.50	1	4	4	8	8	0.01	548	165
78	.54	3	234	75	123	41	2.87	42	166
78	.52	4	350	80	187	47	4.86	41	167
48	.53	8	261	45	192	24	7.63	30	168
150	.82	4	688	167	652	163	4.29	129	169
53	.58	10	456	46	244	24		74	170
313	2.04	8	359	45	733	92	1.15	639	171
313	1.68	3	85	12	50	20	0.11	828	172
213	2.10	1	129	129	271	271	0.41	658	173
365	(a)	2	(a)	(a)	100	85	(a)	(a)	174
313	1.92	4	246	83	487	122	3.79	620	175
212	1.77	1	160	160	289	289	0.54	554	176
288	1.33	2	288	140	306	104	1.04	390	177
267	1.50	1	235	235	384	384	0.82	431	178
288	1.70	4	477	119	811	203	1.67	486	179
48	(a)	13	(a)	(a)	630	34	(a)	(a)	180
150	1.35	2	213	108	290	145	1.28	219	181
53	(a)	5	(a)	(a)		64	(a)	(a)	182
48	(a)	1	(a)	(a)	80	80	(a)	(a)	183
48	.56	2	73	37	41	21	1.32	27	184
230	3.09	3	352	117	1,404	468	1.84	917	185
77	1.04	6	409	68	420	71	8.81	80	186
27	1.21	2	48	22	53	27	1.50	33	187
78	.63	2	112	50	71	80	1.44	43	188
53	(a)	6	(a)	(a)	414	69	(a)	(a)	189
313	1.73	3	458	182	791	264	1.48	513	190
313	2.79	2	290	148	827	414	0.05	874	191
230	3.50	2	398	190	1,400	700	1.73	809	192
150	.26	2	279	115	84	42	1.47	87	193
90	.87	3	279	93	271	91	2.83	97	194

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Man- ual num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
306		Boile men—concluded	Mixed iron and steel	Great Britain
307		Boile men's helper	Mixed iron and steel	Great Britain
307	70	Boiler cleaners	Pig iron	Northern district, U. S.
308	43	do	Pig iron	Northern district, U. S.
309	49	do	Pig iron	Continent of Europe
310		do	Pig iron	Continent of Europe
311	36	do	Pig iron	Great Britain
312	37	do	Pig iron	Great Britain
313		do	Pig iron	Great Britain
314		do	Mixed iron and steel	United States
315		do	Mixed iron and steel	Continent of Europe
316		do	Mixed iron and steel	Great Britain
317	43	Boiler cleaners and laborers	Pig iron	Northern district, U. S.
318	10	Boiler cleaner and water tender	Pig iron	Northern district, U. S.
319	34	Boiler feeders	Pig iron	Great Britain
320	87	do	Pig iron	Great Britain
321		Boiler sealers	Mixed iron and steel	Great Britain
322	7	Boiler tenders	Mixed iron and steel	United States
323		do	Mixed iron and steel	United States
324		do	Mixed iron and steel	United States
325		do	Mixed iron and steel	Continent of Europe
326		do	Mixed iron and steel	Continent of Europe
327		Boiler tender and engineer	Mixed iron and steel	United States
328		Boiler washer	Coke	Continent of Europe
329	9	Boilermakers	Pig iron	Northern district, U. S.
330	1	do	Steel ingots	United States
331		do	Mixed iron and steel	United States
332		do	Mixed iron and steel	United States
333		do	Mixed iron and steel	United States
334		do	Mixed iron and steel	Great Britain
335		do	Coke	Continent of Europe
336	9	Boilermakers' helpers	Pig iron	Northern district, U. S.
337		do	Steel billets	United States
338		do	Mixed iron and steel	United States
339	67	Boilermen	Pig iron	Northern district, U. S.
340		do	Mixed iron and steel	United States
341		do	Mixed iron and steel	Continent of Europe
342		do	Mixed iron and steel	Great Britain
343		Boilermen and gasmen	Mixed iron and steel	United States
344		Boilerman and painter	Mixed iron and steel	United States
345		Boilermiths	Mixed iron and steel	Continent of Europe
346		do	Mixed iron and steel	Continent of Europe
347		do	Mixed iron and steel	Great Britain
348	170	do	Bituminous coal	Great Britain
349		Bolt cutters	Mixed iron and steel	United States
350		do	Mixed iron and steel	United States
351		Bolt packers	Mixed iron and steel	United States
352		Borers	Steel rails	Continent of Europe
353	2	Bottom builders	Steel ingots	United States
354	7	do	Steel ingots	United States
355		do	Steel ingots	Continent of Europe
356		do	Mixed iron and steel	Continent of Europe
357		do	Mixed iron and steel	Great Britain
358	7	Bottom builders' helpers	Steel ingots	United States
359	7	Bottom builders' helper and grinder	Steel ingots	United States
360	1	Bottom men	Steel ingots	United States
361	1	Bottom man and coal handler	Steel ingots	United States
362	1	Bottom man and mason's helper	Steel ingots	United States
363	1	Bottom man and stove handler	Steel ingots	United States
364	146	Bottomers	Bituminous coal	Dominion of Canada
365	39	Box pile makers	Finished bar iron	Great Britain
366	32	Breakers	Pig iron	Northern district, U. S.
367	47	do	Pig iron	Northern district, U. S.
368	64	do	Pig iron	Northern district, U. S.
369	93	do	Pig iron	Southern district, U. S.
370	103	do	Pig iron	Southern district, U. S.
371		do	Steel blooms	United States
372		do	Steel blooms	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless then, Tables I to XL Where no establishment number is given no statement of cost of production (these numbers, note should be taken of the industry, as a new series of numbers is used for each.)

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
150	\$1.27	8	1,038	115	\$1,320	\$167	6.66	\$198	305
151	1.03	1	135	135	140	140	0.87	162	306
365	1.50	1	103	103	184	184	0.28	546	307
365	1.87	29	238	8	106	7	0.65	301	308
90	.28	1	78	78	19	19	0.84	23	309
91	1.20	4	320	80	65	16	3.52	18	310
91	.61	2	196	98	120	60	2.16	56	311
91	.61	4	351	88	239	60	4.36	56	312
185	1.37	1	135	135	111	111	1.00	111	313
186	1.00	1	73	73	73	73	0.43	168	314
48	.58	2	199	99	109	55	2.15	51	315
48	.91	3	93	31	58	19	1.94	29	316
365	1.11	4	159	40	177	44	0.43	406	317
365	1.87	1	729	329	616	616	0.90	663	318
91	.67	2	182	91	122	61	2.00	61	319
91	.65	4	367	92	238	60	4.03	59	320
53	.61	2	111	56	68	34	2.09	32	321
135	1.75	4	160	40	280	70	1.03	271	322
312	1.50	1	241	241	357	357	0.77	484	323
185	1.75	4	779	183	1,280	320	4.70	272	324
312	.81	10	2,000	800	2,424	242	2.58	253	325
313	.77	1	259	259	198	198	0.83	239	326
135	1.88	1	116	116	218	218	0.75	289	327
365	1.48	1	63	63	30	30	0.17	171	328
365	2.80	2	24	12	60	30	0.07	633	329
312	2.25	1	174	174	391	391	0.56	703	330
312	2.33	3	683	228	1,591	530	2.18	729	331
312	(a)	1	(a)	(a)	414	414	(a)	(a)	332
312	2.25	1	8	8	18	18	0.03	704	333
186	1.06	2	418	209	436	218	2.43	108	334
365	1.00	1	2	2	2	2	0.01	263	335
365	1.50	1	9	9	14	14	0.09	568	336
202	1.66	2	372	186	619	310	1.85	338	337
312	1.00	1	228	228	229	229	0.73	312	338
265	1.63	9	354	177	679	290	0.97	597	339
185	1.75	6	899	80	994	139	2.57	270	340
79	.87	1	80	80	77	77	1.13	68	341
156	1.12	6	659	110	1,078	180	6.13	175	342
312	1.71	2	256	178	610	305	1.14	538	343
185	2.16	1	12	12	26	26	0.08	336	344
313	.71	3	609	305	431	216	1.85	222	345
312	.68	4	1,519	380	1,008	252	4.85	267	346
156	1.40	3	628	179	741	247	2.39	219	347
91	1.53	1	90	90	138	138	0.89	140	348
312	2.32	10	1,178	113	1,497	150	3.61	415	349
312	1.80	1	312	312	600	600	1.00	503	350
318	.90	2	877	284	465	233	1.68	278	351
78	.49	8	515	68	270	34	6.08	39	352
132	2.96	4	398	100	1,189	297	3.02	304	353
220	4.89	2	329	164	1,604	802	1.43	1,225	354
27	.66	8	133	15	88	10	4.92	18	355
313	.49	27	6,308	234	8,090	114	20.15	152	356
82	(a)	4	(a)	(a)	175	44	(a)	(a)	357
230	3.87	2	378	189	1,465	733	1.84	391	358
230	1.80	1	235	235	423	423	1.02	414	359
313	1.57	6	814	90	1,276	142	2.80	491	360
313	1.68	1	3	3	5	5	0.01	522	361
313	1.45	1	20	20	29	29	0.06	454	362
318	1.50	1	3	3	3	3	—	470	363
313	.84	6	1,236	206	1,283	214	4.31	396	364
99	1.12	2	230	110	247	124	2.23	111	365
212	1.50	2	493	247	736	368	1.58	467	366
365	1.80	3	496	248	744	372	1.58	548	367
365	1.74	20	2,737	158	6,589	327	10.29	638	368
334	1.29	3	356	119	400	153	1.06	432	369
385	1.50	1	71	71	111	111	0.70	548	370
132	1.70	4	379	95	561	140	2.49	225	371
230	1.87	10	773	77	1,215	122	3.36	382	372

* Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XXIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production pronounced for the establishment was obtained. In referring from this table to those on production by means of

Man- ual num- ber.	Estab- lish- ment num- ber.	Occupation.	Industry.	Locality.
272		Brakeman—conducted	Mixed iron and steel	United States
273	100	do	Bituminous coal	Continent of Europe
274	41	do	Iron ore	United States
275	43	do	Iron ore	United States
276	46	do	Iron ore	United States
277	49	do	Iron ore	United States
278	50	do	Iron ore	United States
279	72	do	Iron ore	United States
280	101	Brakeman, dinky	Pig iron	Southern district, U. S.
281	140	Brakeman, incline	Bituminous coal	Dominion of Canada
282	47	Brakeman, locomotive	Pig iron	Northern district, U. S.
283	7	do	Steel ingots	United States
284		do	Steel blooms	United States
285	56	Brakeman and carthouse man	Pig iron	Northern district, U. S.
286	58	Brakeman and dumper	Pig iron	Northern district, U. S.
287	102	Brakeman and freeman	Pig iron	Southern district, U. S.
288	55	Brakeman and laborers	Pig iron	Northern district, U. S.
289	103	do	Pig iron	Southern district, U. S.
290	79	do	Iron ore	United States
291		Brakener	Mixed iron and steel	United States
292	32	Bricklayers	Pig iron	Northern district, U. S.
293	33	do	Pig iron	Northern district, U. S.
294	104	do	Pig iron	Southern district, U. S.
295	105	do	Pig iron	Southern district, U. S.
296		do	Pig iron	Great Britain
297	17	do	Mock bar iron	United States
298	6	do	Steel ingots	United States
299		do	Steel blooms	United States
300		do	Mixed iron and steel	United States
301		do	Mixed iron and steel	United States
302		do	Mixed iron and steel	United States
303		do	Mixed iron and steel	United States
304	170	do	Bituminous coal	Great Britain
305	60	do	Iron ore	United States
306		Bricklayers and laborers	Steel blooms	United States
307		Bricklayers' helpers	Pig iron	Great Britain
308	17	do	Mock bar iron	United States
309	5	do	Steel ingots	United States
310		do	Mixed iron and steel	United States
311		do	Mixed iron and steel	United States
312		do	Mixed iron and steel	United States
313		do	Mixed iron and steel	United States
314	170	do	Bituminous coal	Great Britain
315		Buggy-boys	Mixed iron and steel	United States
316	7	Buggymen	Mock bar iron	United States
317		do	Mixed iron and steel	United States
318		do	Mixed iron and steel	United States
319		do	Mixed iron and steel	Continent of Europe
320		Buggyman and heaters' helper	Mixed iron and steel	United States
321	7	Buggyman and paddler	Mock bar iron	United States
322		Bundle carriers	Mixed iron and steel	Continent of Europe
323		Bundle carrier and heaters' helper	Mixed iron and steel	Continent of Europe
324		Bandiers	Mixed iron and steel	United States
325		do	Mixed iron and steel	United States
326		do	Mixed iron and steel	Continent of Europe
327		do	Mixed iron and steel	Continent of Europe
328		do	Mixed iron and steel	Continent of Europe
329		do	Mixed iron and steel	Great Britain
330		Bandier and laborer	Mixed iron and steel	United States
331		Bandiers and shippers	Mixed iron and steel	United States
332	29	Bandiers and stock takers	Finished bar iron	Great Britain
333	170	Bye-workmen	Bituminous coal	Great Britain
334	9	Cargemen	Pig iron	Northern district, U. S.
335	10	do	Pig iron	Northern district, U. S.
336	51	do	Pig iron	Northern district, U. S.
337	53	do	Pig iron	Northern district, U. S.
338	103	do	Pig iron	Southern district, U. S.
339	109	do	Pig iron	Southern district, U. S.
340	114	do	Pig iron	Southern district, U. S.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion. Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.					Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.
		Different employées.	Days of work done.		Earnings.		Necessary employées.	Consequent average earnings per em- ployé.	
			Total.	Average.	Total.	Average.			
313	\$1.75	1	309	309	\$550	\$550	0.99	\$566	273
77	.27½	5	251	50	60	14	3.26	21	274
313	1.50	1	63	63	95	95	0.20	472	275
313	1.50	3	916	305	1,374	458	2.93	470	276
313	1.30	5	1,080	212	1,378	276	3.39	407	277
313	1.35	2	534	267	721	361	1.71	423	278
313	1.66½	15	2,400	160	2,999	267	7.66	522	279
365	1.35	1	200	200	267	267	0.55	487	280
313	.78	13	2,745	211	2,092	161	8.77	239	281
365	1.34½	1	246	246	341	341	0.67	506	283
230	1.55	3	77	26	119	40	0.33	355	283
132	1.65	1	123	123	202	202	0.93	217	284
365	1.62	1	168	168	272	272	0.46	591	285
365	1.63½	1	346	346	566	566	0.95	597	286
365	1.28	1	111	111	142	142	0.30	467	287
365	1.59½	3	666	222	1,061	354	1.82	581	288
365	1.25	1	4	4	5	5	0.01	456	289
313	1.64	2	494	247	810	405	1.58	513	290
313	1.75	1	302	302	515	515	0.96	534	291
313	3.30	10	10	1	38	4	0.04	1,189	292
313	4.33½	1	8	8	13	13	0.01	1,356	293
365	4.05½	13	54	4	219	17	0.14	1,480	294
313	3.40	2	67	34	200	100	0.21	934	295
135	1.26½	3	297	99	375	125	2.20	170	296
313	2.94	2	208	104	612	306	0.66	921	297
132	3.82½	12	17	1	65	5	0.13	505	298
251	2.50	1	152	152	382	382	0.61	631	299
313	3.40½	12	182	15	620	52	0.58	1,066	300
313	4.00	4	338	85	1,362	338	1.08	1,252	301
168	3.50	1	168	168	588	588	1.00	588	302
313	3.40½	7	623	89	2,127	304	2.00	1,065	303
91	1.42½	1	59	59	84	84	0.68	130	304
313	3.00	5	89	18	266	53	0.28	935	305
251	1.73½	2	243	122	421	211	0.97	435	306
135	.81	3	316	105	256	85	2.34	109	307
313	1.41	2	406	203	572	286	1.29	441	308
132	1.50	2	3	1	3	2	0.02	198	309
313	1.25	2	500	250	739	370	1.88	392	310
313	1.99	8	759	95	1,509	189	2.42	622	311
168	2.25	1	190	190	428	428	1.13	378	312
313	1.40	2	338	169	472	236	1.07	441	313
91	.81	1	79	79	64	64	0.87	74	314
313	(a)	5	(a)	(a)	1,453	291	(a)	(a)	315
155	1.43	6	250	42	258	60	1.62	222	316
165	1.57	6	132	22	207	35	0.85	249	317
313	1.87½	3	561	187	1,061	350	1.79	586	318
313	.57½	1	170	170	98	98	0.54	180	319
135	1.83½	1	6	6	11	11	0.04	284	320
155	2.16	1	31	31	67	67	0.20	335	321
92	.40	24	878	37	353	15	9.54	37	322
92	.56	1	52	52	29	29	0.57	51	323
168	(a)	1	(a)	(a)	223	223	(a)	(a)	324
313	1.72	3	681	227	1,173	391	2.17	539	325
313	.42½	9	1,837	203	776	86	8.84	133	326
313	.37	10	2,221	222	826	83	7.10	116	327
79	.47	8	369	46	174	22	4.66	37	328
48	(a)	1	(a)	(a)	160	160	(a)	(a)	329
156	1.63½	1	112	112	183	183	0.72	253	330
313	1.25	5	1,256	251	1,569	314	4.01	391	331
99	1.14½	11	1,203	110	1,381	126	12.17	113	332
91	1.01	23	1,221	53	1,236	54	13.42	92	333
365	2.25½	2	400	200	902	451	1.19	823	334
365	1.65	2	339	170	564	282	0.93	607	335
365	1.65	2	631	316	1,032	516	1.73	587	336
181	2.00	2	352	176	703	352	1.94	361	337
365	1.40	1	339	339	473	473	0.93	509	338
365	1.43½	1	316	316	453	453	0.87	523	339
365	1.13½	2	96	48	111	56	0.27	413	340

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(This line shows the total of an occupation in an establishment. In a like comparison the facts for the periods are of equal length. The establishment numbers relate to the cost of production preliminary for the establishment was obtained. In referring from this table to those on production by means of

Est- lish- ment num- ber.	Es- ta- lish- ment num- ber.	Occupation.	Industry.	Locality.
841	12	Cagamen—concluded	Bituminous coal	United States
842	do	do	Bituminous coal	United States
843	126	do	Bituminous coal	Continent of Europe
844	12	do	Iron ore	United States
845	20	Cagamen and driver	Bituminous coal	United States
846	101	Cagamen and fillers	Fig iron	Southern district, U. S.
847	103	do	Fig iron	Southern district, U. S.
848	10	Cagamen and laborer	Fig iron	Northern district, U. S.
849	26	Cagamen and loaders	Bituminous coal	United States
850	10	Cagamen's helpers	Fig iron	Northern district, U. S.
851	10	Cagamen's helper and stock preparer	Fig iron	Northern district, U. S.
852	do	Call boys	Mixed iron and steel	United States
853	7	Callers	Muck bar iron	United States
854	do	do	Mixed iron and steel	United States
855	do	do	Mixed iron and steel	United States
856	176	Capitan men	Bituminous coal	Great Britain
857	1	Car leveler	Iron ore	United States
858	13	Car shifters	Coke	United States
859	1	Carbonizers	Steel ingots	United States
860	do	do	Steel billets	United States
861	9	Carpenters	Fig iron	Northern district, U. S.
862	10	do	Fig iron	Northern district, U. S.
863	22	do	Fig iron	Northern district, U. S.
864	41	do	Fig iron	Northern district, U. S.
865	62	do	Fig iron	Northern district, U. S.
866	49	do	Fig iron	Northern district, U. S.
867	85	do	Fig iron	Northern district, U. S.
868	86	do	Fig iron	Northern district, U. S.
869	67	do	Fig iron	Northern district, U. S.
870	85	do	Fig iron	Northern district, U. S.
871	64	do	Fig iron	Northern district, U. S.
872	101	do	Fig iron	Southern district, U. S.
873	103	do	Fig iron	Southern district, U. S.
874	100	do	Fig iron	Southern district, U. S.
875	do	do	Fig iron	Continent of Europe
876	36	do	Fig iron	Great Britain
877	37	do	Fig iron	Great Britain
878	do	do	Steel ingots	Continent of Europe
879	do	do	Steel billets	United States
880	do	do	Steel blooms	United States
881	do	do	Steel blooms	United States
882	do	do	Mixed iron and steel	United States
883	do	do	Mixed iron and steel	United States
884	do	do	Mixed iron and steel	United States
885	do	do	Mixed iron and steel	United States
886	do	do	Mixed iron and steel	United States
887	do	do	Mixed iron and steel	United States
888	do	do	Mixed iron and steel	United States
889	do	do	Mixed iron and steel	United States
890	do	do	Mixed iron and steel	Continent of Europe
891	do	do	Mixed iron and steel	Continent of Europe
892	do	do	Mixed iron and steel	Continent of Europe
893	do	do	Mixed iron and steel	Continent of Europe
894	do	do	Mixed iron and steel	Great Britain
895	do	do	Mixed iron and steel	Great Britain
896	19	do	Bituminous coal	United States
897	28	do	Bituminous coal	United States
898	90	do	Bituminous coal	United States
899	107	do	Bituminous coal	United States
900	100	do	Bituminous coal	United States
901	do	do	Bituminous coal	United States
902	do	do	Bituminous coal	United States
903	do	do	Bituminous coal	United States
904	do	do	Bituminous coal	United States
905	144	do	Bituminous coal	Dominion of Canada
906	170	do	Bituminous coal	Great Britain
907	6	do	Coke	United States
908	13	do	Coke	United States
909	19	do	Coke	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XL Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
150	\$1.72	8	812	101	\$537	\$179	1.97	\$273	341
151	1.83	8	218	27	610	122	1.92	300	342
152	1.64	8	292	36	187	21	5.78	40	343
153	1.75	2	558	279	806	404	1.78	525	344
154	1.92	2	183	91	314	157	0.53	603	345
155	1.39	199	5,817	29	8,976	39	31.61	221	346
156	1.39	1	78	78	81	81	0.19	475	347
157	1.68	1	250	250	396	396	0.68	578	348
158	1.90	2	288	144	549	275	0.92	585	349
159	1.50	8	450	150	672	224	1.23	548	350
160	1.58	1	833	833	826	826	0.91	577	351
161	1.87	1	278	278	390	390	0.93	431	352
162	1.54	1	7	7	10	10	0.05	221	353
163	1.57	1	382	382	370	370	1.16	493	354
164	1.60	1	179	179	209	209	1.15	332	355
165	1.85	8	309	75	178	46	2.30	78	356
166	1.25	1	183	183	237	237	0.58	399	357
167	1.46	2	299	150	489	245	0.98	460	358
168	2.73	1	15	15	41	41	0.95	856	359
169	2.38	2	288	140	690	345	1.22	460	360
170	2.33	2	368	184	625	312	0.83	731	361
171	1.77	9	1,376	153	2,440	271	4.29	555	362
172	2.36	2	286	143	677	338	0.91	388	363
173	2.09	1	149	149	264	264	0.91	388	364
174	2.53	8	498	163	1,158	284	1.58	721	365
175	1.89	1	314	314	503	503	1.08	690	366
176	2.50	1	149	149	373	373	0.98	690	367
177	2.01	11	2,013	228	8,205	479	0.83	631	368
178	1.60	1	229	229	463	463	0.92	501	369
179	1.75	1	78	78	138	138	1.90	308	370
180	2.00	1	30	30	46	46	0.10	208	371
181	2.48	8	483	97	1,206	241	2.98	457	372
182	1.80	1	351	351	527	527	0.99	632	373
183	2.00	1	329	329	656	656	1.04	632	374
184	0.67	1	44	44	29	29	0.96	81	375
185	0.67	1	77	77	81	81	0.99	83	376
186	0.78	1	107	107	78	78	1.37	97	377
187	1.64	3	39	13	44	14	1.04	46	378
188	2.42	4	430	107	888	222	2.09	430	379
189	2.12	3	160	53	212	71	0.99	303	380
190	2.40	11	921	84	2,310	201	0.99	602	381
191	2.00	1	14	14	41	41	0.94	817	382
192	2.27	19	774	41	1,783	93	2.48	713	383
193	2.23	5	501	100	1,120	224	1.66	700	384
194	2.75	1	374	374	1,013	1,013	1.19	846	385
195	2.00	3	77	77	90	90	0.16	494	386
196	2.05	6	632	105	1,679	279	4.07	412	387
197	2.03	6	696	116	1,493	249	2.22	632	388
198	2.50	1	303	303	759	759	0.99	784	389
199	0.61	7	1,033	148	521	74	3.27	159	390
200	0.61	1	83	83	62	62	1.00	82	391
201	1.54	8	1,619	202	684	177	5.17	171	392
202	0.73	3	183	61	133	44	2.30	60	393
203	0.72	4	241	60	174	44	0.92	35	394
204	1.26	1	149	149	188	188	0.99	197	395
205	2.00	1	152	152	204	204	0.96	316	396
206	1.50	1	61	61	92	92	0.19	472	397
207	2.60	1	6	6	18	18	0.62	635	398
208	2.23	1	53	53	118	118	0.17	397	399
209	(a)	4	(a)	(a)	174	44	(a)	(a)	400
210	2.28	2	14	7	32	16	0.04	715	401
211	1.87	1	200	200	580	580	0.93	694	402
212	2.01	8	109	22	219	44	0.28	403	403
213	1.81	50	3,785	75	6,611	132	12.00	505	404
214	1.43	7	1,418	203	2,103	300	4.53	694	405
215	1.08	4	271	68	294	74	3.98	99	406
216	2.40	1	77	77	183	183	0.97	196	407
217	1.75	1	244	244	411	411	0.75	559	408
218	2.50	1	120	120	300	300	0.38	728	409

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the particular set of agents furnish. The establishment numbers represent the cost of production presented by the establishment was obtained. In referring from this table to those on production by means of

Man days per year.	Est- imate of man- days per year.	Occupation.	Industry.	Locality.
419	—	Carpenters—continued	Coke	Continent of Europe
419	10	do	Iron ore	United States
419	41	do	Iron ore	United States
419	42	do	Iron ore	United States
419	43	do	Iron ore	United States
419	44	do	Iron ore	United States
419	45	do	Iron ore	United States
419	46	do	Iron ore	United States
419	47	do	Iron ore	United States
419	48	do	Iron ore	United States
419	49	do	Iron ore	United States
419	50	do	Iron ore	United States
419	51	do	Iron ore	United States
419	52	do	Iron ore	United States
419	53	do	Iron ore	United States
419	54	do	Iron ore	United States
419	55	do	Iron ore	United States
419	56	do	Iron ore	United States
419	57	do	Iron ore	United States
419	58	do	Iron ore	United States
419	59	do	Iron ore	United States
419	60	do	Iron ore	United States
419	61	do	Iron ore	United States
419	62	do	Iron ore	United States
419	63	do	Iron ore	United States
419	64	do	Iron ore	United States
419	65	do	Iron ore	United States
419	66	do	Iron ore	United States
419	67	do	Iron ore	United States
419	68	do	Iron ore	United States
419	69	do	Iron ore	United States
419	70	do	Iron ore	United States
419	71	do	Iron ore	United States
419	72	do	Iron ore	United States
419	73	do	Iron ore	United States
419	74	do	Iron ore	United States
419	75	do	Iron ore	United States
419	76	do	Iron ore	United States
419	77	do	Iron ore	United States
419	78	do	Iron ore	United States
419	79	do	Iron ore	United States
419	80	do	Iron ore	United States
419	81	do	Iron ore	United States
419	82	do	Iron ore	United States
419	83	do	Iron ore	United States
419	84	do	Iron ore	United States
419	85	do	Iron ore	United States
419	86	do	Iron ore	United States
419	87	do	Iron ore	United States
419	88	do	Iron ore	United States
419	89	do	Iron ore	United States
419	90	do	Iron ore	United States
419	91	do	Iron ore	United States
419	92	do	Iron ore	United States
419	93	do	Iron ore	United States
419	94	do	Iron ore	United States
419	95	do	Iron ore	United States
419	96	do	Iron ore	United States
419	97	do	Iron ore	United States
419	98	do	Iron ore	United States
419	99	do	Iron ore	United States
419	100	do	Iron ore	United States
419	101	do	Iron ore	United States
419	102	do	Iron ore	United States
419	103	do	Iron ore	United States
419	104	do	Iron ore	United States
419	105	do	Iron ore	United States
419	106	do	Iron ore	United States
419	107	do	Iron ore	United States
419	108	do	Iron ore	United States
419	109	do	Iron ore	United States
419	110	do	Iron ore	United States
419	111	do	Iron ore	United States
419	112	do	Iron ore	United States
419	113	do	Iron ore	United States
419	114	do	Iron ore	United States
419	115	do	Iron ore	United States
419	116	do	Iron ore	United States
419	117	do	Iron ore	United States
419	118	do	Iron ore	United States
419	119	do	Iron ore	United States
419	120	do	Iron ore	United States
419	121	do	Iron ore	United States
419	122	do	Iron ore	United States
419	123	do	Iron ore	United States
419	124	do	Iron ore	United States
419	125	do	Iron ore	United States
419	126	do	Iron ore	United States
419	127	do	Iron ore	United States
419	128	do	Iron ore	United States
419	129	do	Iron ore	United States
419	130	do	Iron ore	United States
419	131	do	Iron ore	United States
419	132	do	Iron ore	United States
419	133	do	Iron ore	United States
419	134	do	Iron ore	United States
419	135	do	Iron ore	United States
419	136	do	Iron ore	United States
419	137	do	Iron ore	United States
419	138	do	Iron ore	United States
419	139	do	Iron ore	United States
419	140	do	Iron ore	United States
419	141	do	Iron ore	United States
419	142	do	Iron ore	United States
419	143	do	Iron ore	United States
419	144	do	Iron ore	United States
419	145	do	Iron ore	United States
419	146	do	Iron ore	United States
419	147	do	Iron ore	United States
419	148	do	Iron ore	United States
419	149	do	Iron ore	United States
419	150	do	Iron ore	United States
419	151	do	Iron ore	United States
419	152	do	Iron ore	United States
419	153	do	Iron ore	United States
419	154	do	Iron ore	United States
419	155	do	Iron ore	United States
419	156	do	Iron ore	United States
419	157	do	Iron ore	United States
419	158	do	Iron ore	United States
419	159	do	Iron ore	United States
419	160	do	Iron ore	United States
419	161	do	Iron ore	United States
419	162	do	Iron ore	United States
419	163	do	Iron ore	United States
419	164	do	Iron ore	United States
419	165	do	Iron ore	United States
419	166	do	Iron ore	United States
419	167	do	Iron ore	United States
419	168	do	Iron ore	United States
419	169	do	Iron ore	United States
419	170	do	Iron ore	United States
419	171	do	Iron ore	United States
419	172	do	Iron ore	United States
419	173	do	Iron ore	United States
419	174	do	Iron ore	United States
419	175	do	Iron ore	United States
419	176	do	Iron ore	United States
419	177	do	Iron ore	United States
419	178	do	Iron ore	United States
419	179	do	Iron ore	United States
419	180	do	Iron ore	United States
419	181	do	Iron ore	United States
419	182	do	Iron ore	United States
419	183	do	Iron ore	United States
419	184	do	Iron ore	United States
419	185	do	Iron ore	United States
419	186	do	Iron ore	United States
419	187	do	Iron ore	United States
419	188	do	Iron ore	United States
419	189	do	Iron ore	United States
419	190	do	Iron ore	United States
419	191	do	Iron ore	United States
419	192	do	Iron ore	United States
419	193	do	Iron ore	United States
419	194	do	Iron ore	United States
419	195	do	Iron ore	United States
419	196	do	Iron ore	United States
419	197	do	Iron ore	United States
419	198	do	Iron ore	United States
419	199	do	Iron ore	United States
419	200	do	Iron ore	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless the establishment number is given. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
265	\$0.62	2	8	8	95	95	0.02	8304	416
212	1.02	2	196	65	396	172	0.22	622	417
212	2.18	4	600	125	1,091	273	1.60	603	418
212	2.00	1	47	47	83	83	0.15	619	419
212	1.53½	4	806	210	1,590	393	2.18	481	420
212	1.60	1	173	173	257	257	0.53	468	421
217	1.35	1	177	177	239	239	0.82	292	422
212	2.08	1	292	292	553	553	0.93	625	423
212	2.03	4	661	216	1,752	438	2.78	635	424
212	1.10½	2	280	145	216	173	0.92	374	425
155	1.25	2	144	72	162	81	0.03	196	426
212	1.86	2	178	89	273	111	0.57	386	427
212	1.89	16	1,360	85	2,705	169	4.35	622	428
212	1.57½	1	193	193	304	304	0.62	483	429
212	1.80	1	65	65	104	104	0.21	601	430
143	1.35	1	145	145	196	196	1.01	193	431
212	1.57½	1	37	37	48	48	0.12	418	432
212	1.82	1	29	29	53	53	0.80	572	433
212	1.88½	1	79	79	148	148	0.25	500	434
212	1.88½	1	79	79	148	148	0.25	500	435
212	1.74½	2	121	60	311	70	0.20	846	436
212	2.05½	1	38	38	73	73	0.11	644	437
212	2.11	1	9	9	19	19	0.02	661	438
212	1.28	1	128	128	160	160	0.41	391	439
212	1.50	1	55	55	82	82	0.18	467	440
78	1.40½	1	1,190	66	690	53	15.26	30	441
212	1.25	2	387	194	525	263	1.24	425	442
212	1.36½	7	680	97	927	132	2.17	427	443
212	1.46½	3	201	101	292	146	0.64	455	444
212	1.12½	1	300	300	328	328	0.86	353	445
265	1.60	22	4,877	203	7,005	205	12.81	647	446
265	1.57½	1	236	236	329	329	0.02	875	447
78	1.47½	8	166	55	79	26	2.12	37	448
63	1.61	1	55	55	74	74	1.04	33	449
143	2.18½	4	267	67	583	146	1.86	212	450
266	2.54½	2	446	223	1,125	568	1.56	728	451
266	2.74½	6	606	149	1,624	498	2.08	785	452
266	2.50	2	402	201	1,005	503	1.41	715	453
266	2.64½	2	286	143	1,009	500	0.86	1,149	454
266	2.25	2	446	223	1,004	502	1.66	644	455
77	1.41½	1	72	72	80	80	0.34	32	456
78	1.71	2	144	72	246	123	1.85	133	457
212	(a)	18	(a)	(a)	2,790	156	(a)	(a)	458
266	(a)	5	(a)	(a)	2,544	709	(a)	(a)	459
266	(a)	13	(a)	(a)	2,747	288	(a)	(a)	460
212	2.74½	12	1,570	131	5,942	497	5.01	1,183	461
267	4.85	2	412	206	2,039	1,020	1.43	1,420	462
168	(a)	2	(a)	(a)	905	453	(a)	(a)	463
155	1.77½	7	110	16	195	28	0.71	275	464
212	(a)	9	(a)	(a)	4,102	456	(a)	(a)	465
212	1.79½	8	1,267	158	2,273	284	4.05	562	466
212	1.92½	15	3,686	245	2,299	227	11.61	293	467
92	1.82½	16	1,028	64	654	41	11.18	50	468
212	1.84½	12	3,310	276	2,800	233	10.56	265	469
156	1.80½	6	714	119	1,075	179	4.58	235	470
212	1.48½	1	161	161	239	239	0.61	465	471
212	1.36½	1	80	80	109	109	0.28	426	472
155	2.00	2	76	38	132	76	0.49	310	473
212	1.36½	1	204	204	281	281	0.66	437	474
246	(a)	1	(a)	(a)	184	184	(a)	(a)	475
212	1.41	1	285	285	289	289	0.65	441	476
212	1.49	2	50	25	74	27	0.16	463	477
155	1.74	4	115	29	204	50	0.73	270	478
212	1.48	3	463	203	568	284	1.29	457	479
212	(a)	1	(a)	(a)	240	240	(a)	(a)	480
212	(a)	4	(a)	(a)	470	118	(a)	(a)	481
212	1.03½	2	289	144	1,160	580	1.24	626	482
212	2.21	4	711	178	1,571	393	2.28	622	483

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. Is referring from this table to those on production by means of

Man- ual num- ber.	Es- ta- blish- ment num- ber.	Occupation.	Industry.	Locality.
479		Catchers and shearmen.....	Mixed iron and steel..	United States.....
479		Catcher and atticher-in.....	Mixed iron and steel..	United States.....
480		Catchers and straighteners.....	Mixed iron and steel..	United States.....
481		do.....	Mixed iron and steel..	United States.....
482		Catchers' helpers.....	Steel rails.....	Continent of Europe.....
483		do.....	Mixed iron and steel..	United States.....
484		do.....	Mixed iron and steel..	United States.....
485		do.....	Mixed iron and steel..	Great Britain.....
486	40	Chargers.....	Pig iron.....	Continent of Europe.....
487		do.....	Pig iron.....	Great Britain.....
488	29	do.....	Finished bar iron.....	United States.....
489	1	do.....	Steel ingots.....	United States.....
490		do.....	Steel ingots.....	Continent of Europe.....
491		do.....	Steel blooms.....	United States.....
492		do.....	Steel blooms.....	United States.....
493		do.....	Steel rails.....	United States.....
494		do.....	Mixed iron and steel..	United States.....
495		do.....	Mixed iron and steel..	United States.....
496		do.....	Mixed iron and steel..	United States.....
497		do.....	Mixed iron and steel..	United States.....
498		do.....	Mixed iron and steel..	Continent of Europe.....
499		do.....	Mixed iron and steel..	Continent of Europe.....
500		do.....	Mixed iron and steel..	Great Britain.....
501		do.....	Mixed iron and steel..	Great Britain.....
502	9	do.....	Coke.....	United States.....
503	13	do.....	Coke.....	United States.....
504	19	do.....	Coke.....	United States.....
505	23	do.....	Coke.....	United States.....
506	25	do.....	Coke.....	United States.....
507	29	do.....	Coke.....	United States.....
508		do.....	Coke.....	Continent of Europe.....
509		Charger and chipper.....	Steel billets.....	United States.....
510		Charger and doorman.....	Steel blooms.....	United States.....
511		Chargers and drawers.....	Steel blooms.....	United States.....
512	23	do.....	Coke.....	United States.....
513		Charger and furnace helper.....	Steel billets.....	United States.....
514		Charger and guide.....	Steel billets.....	United States.....
515		Chargers and heaters.....	Mixed iron and steel..	United States.....
516		do.....	Mixed iron and steel..	Continent of Europe.....
517		Chargers and heaters' helpers.....	Steel billets.....	United States.....
518		do.....	Mixed iron and steel..	United States.....
519		do.....	Mixed iron and steel..	Continent of Europe.....
520		Charger and hooker.....	Steel billets.....	United States.....
521		Chargers and laborers.....	Steel billets.....	United States.....
522		do.....	Mixed iron and steel..	United States.....
523		Charger and loader.....	Steel blooms.....	United States.....
524		Chargers and pilers.....	Mixed iron and steel..	United States.....
525	7	Charger and pusher's helper.....	Steel ingots.....	United States.....
526		Charger and scrap wheler.....	Steel blooms.....	United States.....
527		Chargers and sweepers.....	Steel billets.....	United States.....
528		Chargers and tongmen.....	Steel billets.....	United States.....
529		Charger and transmitter.....	Steel billets.....	United States.....
530	13	Charger and watchman.....	Coke.....	United States.....
531		Chargers' helpers.....	Pig iron.....	Great Britain.....
532		do.....	Steel blooms.....	United States.....
533		Checker.....	Mixed iron and steel..	Great Britain.....
534	1	Chemists.....	Steel ingots.....	United States.....
535		Chemist, assistant.....	Mixed iron and steel..	Continent of Europe.....
536		Chillmen.....	Mixed iron and steel..	Great Britain.....
537		Chippers.....	Steel ingots.....	Continent of Europe.....
538		do.....	Steel billets.....	United States.....
539		do.....	Mixed iron and steel..	Great Britain.....
540		Chippers and pilers.....	Mixed iron and steel..	Great Britain.....
541		Chipper and mason's helper.....	Steel billets.....	United States.....
542		Cinder boys.....	Mixed iron and steel..	United States.....
543		Cinder loaders.....	Mixed iron and steel..	Continent of Europe.....
544		do.....	Mixed iron and steel..	Continent of Europe.....
545	9	Cinder snappers.....	Pig iron.....	Northern district, U. S.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
288	(a)	4	(a)	(a)	63,344	8830	(a)	(a)	678
290	(a)	1	(a)	(a)	309	309	(a)	(a)	479
312	\$2.39	1	241	241	529	529	0.77	6887	480
125	1.61	1	72	72	116	116	0.46	250	481
78	1.49	1	61	61	91	91	0.78	118	482
287	3.18	2	412	206	1,313	657	1.43	915	483
169	(a)	2	(a)	(a)	100	50	(a)	(a)	484
156	1.17	2	364	182	406	203	2.34	174	485
90	.71	4	350	88	250	63	2.09	64	486
135	1.20	8	1,060	133	1,367	171	8.00	171	487
99	.89	5	540	108	376	75	5.45	89	488
818	2.48	1	125	125	306	306	0.40	771	489
78	.68	9	519	58	352	39	8.66	53	490
202	2.19	51	1,284	25	2,811	55	8.35	443	491
220	3.77	8	1,149	144	4,324	543	5.00	868	492
77	.72	2	123	62	89	45	1.60	56	493
318	2.25	1	89	89	307	307	0.58	728	494
287	1.73	6	1,292	215	2,223	371	4.50	494	495
165	1.25	14	150	11	188	13	0.97	194	496
312	1.45	8	648	81	938	117	2.07	464	497
92	.56	51	1,232	24	880	14	13.39	53	498
318	.45	2	637	209	344	122	1.72	142	499
156	.82	4	576	144	532	133	3.68	145	500
53	(a)	5	(a)	(a)	198	40	(a)	(a)	501
92	1.00	4	200	50	200	50	2.17	92	502
318	1.80	4	867	167	1,203	301	2.14	566	503
318	1.30	1	166	166	249	249	0.53	478	504
312	1.00	12	1,510	126	1,832	153	4.83	318	505
312	1.29	2	323	162	430	215	1.00	508	506
305	1.29	4	1,296	324	1,471	368	1.36	428	507
305	.85	8	1,601	200	865	107	4.30	202	508
302	1.70	1	18	18	22	22	0.06	367	509
220	2.00	1	10	10	20	20	0.04	828	510
132	2.75	12	794	66	2,188	182	8.01	394	511
318	1.23	2	96	48	200	100	0.61	287	512
202	2.50	1	2	2	5	5	0.01	505	513
202	2.00	1	4	4	8	8	0.02	404	514
312	4.32	1	173	173	782	782	0.58	1,417	515
92	1.20	2	166	83	167	84	1.70	110	516
302	2.12	4	364	91	779	195	1.80	432	517
155	1.28	2	68	34	82	41	0.43	195	518
92	.89	1	58	58	40	40	0.62	63	519
202	2.70	1	128	128	341	341	0.62	547	520
202	1.50	1	32	32	60	60	0.10	316	521
312	1.87	4	213	53	282	71	0.66	431	522
220	2.18	1	124	124	271	271	0.54	502	523
287	1.67	6	890	148	1,486	248	3.10	479	524
300	2.97	1	106	106	312	312	0.46	683	525
132	2.56	1	23	23	60	60	0.17	238	526
202	1.60	2	8	4	10	5	0.03	237	527
202	2.10	2	47	24	90	45	0.23	425	528
202	2.11	1	120	120	253	253	0.50	426	529
312	1.68	1	293	293	494	494	0.94	528	530
125	.54	2	232	116	155	78	2.09	74	531
285	1.42	5	134	27	274	55	0.68	330	532
52	.60	1	58	58	40	40	1.00	27	533
305	4.60	4	863	216	4,032	1,008	2.37	1,714	534
92	.40	1	92	92	43	43	1.00	43	535
53	(a)	34	(a)	(a)	1,400	41	(a)	(a)	536
78	.43	2	94	47	41	21	1.21	24	537
202	1.84	7	245	35	699	99	1.71	391	538
53	.60	8	418	52	253	32	7.80	32	539
48	(a)	8	(a)	(a)	111	14	(a)	(a)	540
202	1.85	1	158	158	292	292	0.78	373	541
312	.75	5	595	119	447	89	1.90	235	542
77	.88	3	220	73	178	59	2.98	48	543
312	.19	1	258	258	48	48	0.78	80	544
305	1.92	2	445	223	684	342	1.22	545	545

* Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- ta- blish- ment num- ber.	Occupation.	Industry.	Locality.
804	58	Cinder snappers—concoiled.....	Pig iron.....	Northern district, U. S.
847	7	do.....	Steel ingots.....	United States.....
848	7	Cinder snappers and cinder wheeler.....	Steel ingots.....	United States.....
849	7	Cinder snapper and crane-man.....	Steel ingots.....	United States.....
850	9	Cinder snapper and helper.....	Pig iron.....	Northern district, U. S.
851	9	Cinder snappers and laborers.....	Pig iron.....	Northern district, U. S.
852	34	do.....	Pig iron.....	Northern district, U. S.
853	9	Cinder snapper and ore piler.....	Pig iron.....	Northern district, U. S.
854	7	Cinder snapper and steel pointer.....	Steel ingots.....	United States.....
855	58	Cinder snapper and wheelman.....	Pig iron.....	Northern district, U. S.
856		Cinder sorters.....	Pig iron.....	Continent of Europe.....
857	23	Cinder tappers.....	Pig iron.....	Northern district, U. S.
858	64	do.....	Pig iron.....	Northern district, U. S.
859	95	do.....	Pig iron.....	Southern district, U. S.
860	101	do.....	Pig iron.....	Southern district, U. S.
861	114	do.....	Pig iron.....	Southern district, U. S.
862		do.....	Pig iron.....	Continent of Europe.....
863	36	do.....	Pig iron.....	Great Britain.....
864	2	do.....	Steel ingots.....	United States.....
865	101	Cinder tappers and coke furnace.....	Pig iron.....	Southern district, U. S.
866	27	Cinder tapper and driver.....	Pig iron.....	Northern district, U. S.
867	95	Cinder tappers and fillers.....	Pig iron.....	Southern district, U. S.
868	84	Cinder tapper and gutterman.....	Pig iron.....	Northern district, U. S.
869	23	Cinder tapper and iron handler.....	Pig iron.....	Northern district, U. S.
870	101	Cinder tapper and iron piler.....	Pig iron.....	Southern district, U. S.
871	23	Cinder tappers and laborers.....	Pig iron.....	Northern district, U. S.
872	84	do.....	Pig iron.....	Northern district, U. S.
873	95	do.....	Pig iron.....	Southern district, U. S.
874	101	do.....	Pig iron.....	Southern district, U. S.
875	7	Cinder tapper and ladle liner.....	Steel ingots.....	United States.....
876	2	Cinder tapper and manganese heater.....	Steel ingots.....	United States.....
877	23	Cinder tapper and ore breaker.....	Pig iron.....	Northern district, U. S.
878	84	Cinder tappers' helpers.....	Pig iron.....	Northern district, U. S.
879	17	Cinder wheelers.....	Muck bar iron.....	United States.....
880	26	do.....	Muck bar iron.....	United States.....
881	7	do.....	Steel ingots.....	United States.....
882	do	do.....	Steel blooms.....	United States.....
883	do	do.....	Mixed iron and steel.....	United States.....
884	do	do.....	Mixed iron and steel.....	United States.....
885	do	do.....	Mixed iron and steel.....	Continent of Europe.....
886	do	do.....	Mixed iron and steel.....	Great Britain.....
887	do	do.....	Mixed iron and steel.....	Great Britain.....
888	7	Cinder wheeler and fireman.....	Steel ingots.....	United States.....
889	16	Cindermen.....	Pig iron.....	Northern district, U. S.
890	23	do.....	Pig iron.....	Northern district, U. S.
891	42	do.....	Pig iron.....	Northern district, U. S.
892	49	do.....	Pig iron.....	Northern district, U. S.
893	35	do.....	Pig iron.....	Northern district, U. S.
894	108	do.....	Pig iron.....	Southern district, U. S.
895	7	do.....	Muck bar iron.....	United States.....
896	9	do.....	Muck bar iron.....	United States.....
897	9	do.....	Finished bar iron.....	United States.....
898	1	do.....	Steel ingots.....	United States.....
899	7	do.....	Steel ingots.....	United States.....
900	do	do.....	Steel ingots.....	Continent of Europe.....
901	do	do.....	Mixed iron and steel.....	United States.....
902	do	do.....	Mixed iron and steel.....	United States.....
903	do	do.....	Mixed iron and steel.....	United States.....
904	7	Cinderman, furnace.....	Steel ingots.....	United States.....
905	55	Cindermen and fillers.....	Pig iron.....	Northern district, U. S.
906	7	Cinderman and grinder.....	Steel ingots.....	United States.....
907	49	Cinderman and helper.....	Pig iron.....	Northern district, U. S.
908	49	Cindermen and iron handlers.....	Pig iron.....	Northern district, U. S.
909	49	do.....	Pig iron.....	Northern district, U. S.
910	16	Cindermon and laborers.....	Pig iron.....	Northern district, U. S.
911	25	do.....	Pig iron.....	Northern district, U. S.
912	42	do.....	Pig iron.....	Northern district, U. S.
913	58	do.....	Pig iron.....	Northern district, U. S.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.					Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.
		Different employés.	Days of work done.		Earnings.		Necessary employés.	Consequent average earnings per em- ployé.	
			Total.	Average.	Total.	Average.			
365	\$1.80	9	2,173	241	\$3,819	\$428	8.95	\$647	546
230	3.36	6	922	154	3,026	516	4.00	772	547
230	1.83	1	65	65	119	119	0.28	421	548
230	2.82	1	22	22	62	62	0.10	648	549
365	2.09	1	358	258	539	539	0.71	763	550
365	1.75	4	575	144	1,005	251	1.57	638	551
365	1.64	1	137	137	225	225	0.38	599	552
365	1.93	1	133	133	257	257	0.36	705	553
230	5.40	1	20	20	108	108	0.69	1,242	554
365	1.68	1	248	248	417	417	0.68	614	555
91	.85	3	213	71	75	25	2.34	32	556
365	1.52½	4	944	236	1,495	374	2.59	578	557
122	1.20	4	419	105	501	125	2.43	146	558
334	1.32	57	2,640	46	2,482	61	7.91	441	559
184	1.37½	70	3,372	48	4,635	66	18.33	253	560
365	.96	4	712	178	645	171	1.95	351	561
91	.58½	6	448	75	263	44	4.92	53	562
91	.82	2	182	91	149	75	2.00	75	563
132	2.25	1	78	78	175	175	0.59	296	564
184	1.25	3	24	8	30	10	0.12	230	565
365	1.60	1	249	249	398	398	0.68	583	566
334	1.16½	4	79	20	92	23	0.24	389	567
122	1.28½	1	7	7	9	9	0.06	157	568
365	2.25½	1	71	71	160	160	0.19	823	569
184	1.3½	1	6	6	8	8	0.03	245	570
365	1.49½	4	562	141	840	210	1.54	546	571
122	1.13½	1	44	44	50	50	0.36	139	572
334	1.20	1	5	5	6	6	0.01	401	573
184	1.17½	5	510	102	599	120	2.77	216	574
230	3.49	1	121	121	422	422	0.53	802	575
132	2.93½	1	80	80	235	235	0.61	388	576
365	1.52½	1	143	143	218	218	0.39	556	577
122	1.10	3	216	72	238	79	1.77	134	578
286	1.25½	12	469	39	588	49	1.64	359	579
286	1.35	3	269	90	364	121	0.94	387	580
230	1.55	3	69	23	107	36	0.30	257	581
132	1.60	1	120	120	191	191	0.91	210	582
287	1.05	18	1,608	124	2,659	206	5.66	475	583
168	1.70½	6	224	37	382	64	1.23	287	584
313	.48½	7	2,095	299	1,021	146	6.69	153	585
48	.38	8	323	40	123	15	6.79	18	586
53	.78	2	112	56	82	41	2.11	39	587
230	1.66½	1	6	6	10	10	0.03	382	588
365	1.75	4	939	235	1,604	401	2.57	623	589
365	1.55	17	3,106	183	4,808	283	8.51	565	590
365	1.50	2	623	312	935	468	1.71	548	591
365	1.25	2	2,719	237	2,390	283	7.45	455	592
181	1.75	12	1,034	86	1,800	150	5.71	315	593
365	1.13½	26	3,080	118	2,493	134	8.44	414	594
155	1.58½	5	268	54	425	85	1.73	246	595
313	1.25	4	432	108	548	135	1.38	390	596
313	1.25	1	133	133	164	164	0.42	389	597
313	1.25	3	421	140	529	176	1.35	393	598
230	3.93	4	501	125	1,970	493	2.18	904	599
78	.63	20	1,004	50	624	31	12.87	48	600
286	1.80½	15	1,453	97	2,621	175	5.08	516	601
313	1.29½	15	1,780	119	2,304	154	5.68	405	602
155	1.32	3	25	13	33	17	0.16	205	603
230	1.60	1	10	10	16	16	0.04	368	604
181	1.53	2	22	12	35	18	0.13	275	605
230	2.39	1	228	228	545	545	0.90	550	606
365	1.32	1	320	320	423	423	0.82	482	607
365	1.62	1	254	254	411	411	0.79	591	608
365	1.78½	1	103	103	184	184	0.28	652	609
365	1.52	4	817	204	1,241	310	2.24	554	610
365	1.48	1	108	108	160	160	0.39	541	611
365	1.41	2	507	254	716	358	1.39	515	612
181	1.58	4	50	13	79	29	0.28	286	613

TABLE XLIII.—SUMMARY OF ACTUAL AND THEORETICAL.

(Each line shows the total of an occupation in an establishment. In a line occupation the date for the period are of equal length. The establishment numbers relate to the cost of production program for the establishment was obtained. In referring from this table to share on production by means of

Man- power unit.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
614		Cindermen and laborers—combined	Mixed iron and steel	United States
615		do	Mixed iron and steel	United States
616		Cindermen and ladle cleaners	Steel ingots	Continent of Europe
617	86	Cindermen and metal carriers	Pig iron	Northern district, U. S.
618	7	Cindermen and metal wheelers	Steel ingots	United States
619	7	Cindermen and strap loaders	Steel ingots	United States
620	3	Cindermen and teammen	Steel ingots	United States
621		Civil engineers	Bituminous coal	United States
622	86	Cleaners	Pig iron	Great Britain
623		do	Steel rails	Continent of Europe
624		do	Mixed iron and steel	United States
625		do	Mixed iron and steel	Continent of Europe
626		do	Mixed iron and steel	Continent of Europe
627	150	do	Bituminous coal	Continent of Europe
628		do	Coke	Continent of Europe
629	86	Cleaners, enginehouses	Pig iron	Great Britain
630	97	do	Pig iron	Great Britain
631	100	Cleaners, lamp	Bituminous coal	Continent of Europe
632		Cleaners, mill	Mixed iron and steel	Great Britain
633	86	Cleaners, office	Pig iron	Northern district, U. S.
634	86	do	Pig iron	Great Britain
635	97	do	Pig iron	Great Britain
636	1	do	Steel ingots	United States
637		do	Steel billets	United States
638		do	Mixed iron and steel	United States
639		do	Mixed iron and steel	Great Britain
640		Cleaners, rail bank	Mixed iron and steel	Great Britain
641		Cleaners, road	Mixed iron and steel	Great Britain
642	23	Cleaners, stack	Pig iron	Northern district, U. S.
643	6	Cleaners, track	Coke	United States
644	23	Cleaner, stack, and filler	Pig iron	Northern district, U. S.
645	23	Cleaner, stack, and keepers' helper	Pig iron	Northern district, U. S.
646	20	Cleaner, stack, and storeman	Pig iron	Northern district, U. S.
647	1	Clocks and weighmen	Iron ore	United States
648		Clippers	Steel rails	Continent of Europe
649		do	Mixed iron and steel	Great Britain
650		Coachmen	Mixed iron and steel	Great Britain
651		do	Mixed iron and steel	Great Britain
652		do	Steel blooms	Great Britain
653	1	Coal dumper	Steel ingots	United States
654		Coal handlers	Mixed iron and steel	United States
655		Coal igniter	Mixed iron and steel	Continent of Europe
656	170	Coal inspector	Bituminous coal	Great Britain
657	43	Coal crushers	Pig iron	Northern district, U. S.
658		Coal suppliers	Mixed iron and steel	Continent of Europe
659		Coal unloaders	Mixed iron and steel	United States
660	101	Coal wheelers	Pig iron	Southern district, U. S.
661	7	do	Muck bar iron	United States
662	1	do	Steel ingots	United States
663		do	Mixed iron and steel	United States
664		do	Mixed iron and steel	United States
665		do	Mixed iron and steel	Continent of Europe
666		do	Mixed iron and steel	Continent of Europe
667	101	Coal wheelers and firemen	Pig iron	Southern district, U. S.
668	1	do	Steel ingots	United States
669	1	Coal wheeler and iron handler	Steel ingots	United States
670	1	Coal wheeler and laborer	Steel ingots	United States
671	1	Coal wheeler and unloader	Steel ingots	United States
672	9	Coke boners	Coke	United States
673		Coke carriers	Steel ingots	Continent of Europe
674	23	Coke cleaner	Pig iron	Northern district, U. S.
675	23	Coke cleaner and ore breaker	Pig iron	Northern district, U. S.
676		Coke collectors	Mixed iron and steel	Great Britain
677	101	Coke drivers	Pig iron	Southern district, U. S.
678	101	Coke drivers and laborers	Pig iron	Southern district, U. S.
679	101	Coke driver and teamster	Pig iron	Southern district, U. S.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.	
		Different employés.	Days of work done.		Earnings.		Necessary employés.		Consequent average earnings per em- ployé.
			Total.	Average.	Total.	Average.			
313	\$1.10½	1	262	262	\$313	\$313	0.84	\$374	614
155	1.33½	1	3	3	4	4	0.02	207	615
78	.64	1	69	69	44	44	0.88	50	616
181	2.37½	3	338	113	803	268	1.87	430	617
230	3.44½	3	453	151	1,560	520	1.97	792	618
230	2.91	1	135	135	393	393	0.59	670	619
132	2.66	1	115	115	306	306	0.87	351	620
313	1.78	5	45	9	80	16	0.15	556	621
78	.26½	1	78	78	21	21	1.00	21	622
78	.46	2	163	82	75	38	2.09	36	623
313	1.50	1	236	236	354	354	0.75	470	624
313	.28½	4	1,172	293	335	81	3.74	89	625
92	.53	1	92	92	53	53	1.00	53	626
77	.25	2	107	54	27	14	1.39	19	627
365	.31	1	53	53	16	16	0.15	110	628
78	.26½	1	78	78	21	21	1.00	21	629
78	.24½	2	156	78	38	19	2.00	19	630
77	.34	2	153	77	52	26	1.99	26	631
48	.50	5	209	42	105	21	4.25	24	632
313	.37½	1	300	300	113	113	0.98	118	633
78	.16	1	78	78	13	13	1.00	13	634
78	.14	1	78	78	11	11	1.00	11	635
313	1.00	1	16	16	16	16	0.05	313	636
202	1.00	1	30	30	30	30	0.15	202	637
313	.57½	1	313	313	180	180	1.00	180	638
48	.86½	1	48	48	18	18	1.00	18	639
53	.50½	2	84	42	45	23	1.58	28	640
48	.46	7	243	35	112	16	5.07	22	641
365	1.40	2	183	92	261	131	0.50	521	642
92	.98	15	516	34	506	34	5.60	90	643
365	1.51	1	291	291	440	440	0.80	552	644
365	1.50	1	18	18	27	27	0.05	548	645
365	1.55	1	357	357	554	554	0.98	566	646
365	1.62	5	778	156	1,260	253	2.13	591	647
78	.50	8	826	66	263	33	6.74	39	648
156	1.02	4	496	124	507	127	2.18	159	649
48	.57	59	2,103	36	1,196	20	43.81	27	650
53	(a)	20	(a)	(a)	862	43	(a)	(a)	651
144	1.50	1	166	166	254	254	1.15	230	652
313	1.53	39	185	5	283	7	0.59	479	653
92	.72	1	89	89	28	28	0.43	66	654
91	1.25½	1	78	78	97	97	0.86	113	655
365	1.32	4	961	240	1,267	317	2.61	481	656
92	.48	4	175	44	84	21	1.90	44	657
313	(a)	(b)	(a)	(a)	2,166	(b)	(a)	(a)	658
184	1.00	5	57	11	57	11	0.31	184	659
155	1.50	5	208	42	313	63	1.34	233	660
313	1.54½	14	459	33	709	51	1.47	483	661
313	1.25	1	324	324	403	403	1.04	391	662
155	1.39½	14	789	56	1,100	79	5.06	216	663
313	.44	12	2,009	251	1,325	110	9.61	138	664
79	.53	2	156	78	83	42	1.97	42	665
184	1.27	2	155	78	107	90	0.84	234	666
313	1.43	1	7	7	10	10	0.03	447	667
313	2.00	1	3	3	6	6	0.01	626	668
313	1.50	1	40	40	60	60	0.13	470	669
313	1.56½	1	30	30	47	47	0.10	490	670
92	2.15	2	133	67	286	143	1.45	198	671
77	.62	2	119	60	74	37	1.55	48	672
365	1.50	1	87	87	54	54	0.10	533	673
365	1.48½	1	298	298	442	442	0.82	541	674
53	.44½	2	100	50	48	24	1.89	25	675
184	1.15	23	532	23	600	26	2.84	211	676
184	1.07	7	345	49	370	53	1.88	197	677
184	1.06	1	147	147	156	156	0.80	195	678

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employés not given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Man- ual num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
614		Cindermen and laborers—concluded..	Mixed iron and steel.	United States.....
615		do	Mixed iron and steel.	United States.....
616		Cinderman and ladle cleaner.....	Steel ingots.....	Continent of Europe.....
617	86	Cindermen and metal carriers.....	Pig iron.....	Northern district, U. S..
618	7	Cindermen and metal wheelers.....	Steel ingots.....	United States.....
619	7	Cinderman and scrap loader.....	Steel ingots.....	United States.....
620	1	Cinderman and vesselman.....	Steel ingots.....	United States.....
621		Civil engineers.....	Bituminous coal.....	United States.....
622	86	Cleaners.....	Pig iron.....	Great Britain.....
623		do	Steel rails.....	Continent of Europe.....
624		do	Mixed iron and steel.....	United States.....
625		do	Mixed iron and steel.....	Continent of Europe.....
626		do	Mixed iron and steel.....	Continent of Europe.....
627	150	do	Bituminous coal.....	Continent of Europe.....
628		do	Coke.....	Continent of Europe.....
629	26	Cleaners, enginehouses.....	Pig iron.....	Great Britain.....
630	87	do	Pig iron.....	Great Britain.....
631	150	Cleaners, lamp.....	Bituminous coal.....	Continent of Europe.....
632		Cleaners, mill.....	Mixed iron and steel.....	Great Britain.....
633	50	Cleaners, office.....	Pig iron.....	Northern district, U. S..
634	24	do	Pig iron.....	Great Britain.....
635	87	do	Pig iron.....	Great Britain.....
636	1	do	Steel ingots.....	United States.....
637		do	Steel billets.....	United States.....
638		do	Mixed iron and steel.....	United States.....
639		do	Mixed iron and steel.....	Great Britain.....
640		Cleaners, rail bank.....	Mixed iron and steel.....	Great Britain.....
641		Cleaners, road.....	Mixed iron and steel.....	Great Britain.....
642	23	Cleaners, stack.....	Pig iron.....	Northern district, U. S..
643	0	Cleaners, track.....	Coke.....	United States.....
644	23	Cleaner, stack, and filler.....	Pig iron.....	Northern district, U. S..
645	23	Cleaner, stack, and keepers' helper.....	Pig iron.....	Northern district, U. S..
646	23	Cleaner, stack, and storeman.....	Pig iron.....	Northern district, U. S..
647	1	Clerks and weighmen.....	Iron ore.....	United States.....
648		Clippers.....	Steel rails.....	Continent of Europe.....
649		do	Mixed iron and steel.....	Great Britain.....
650		Coachers.....	Mixed iron and steel.....	Great Britain.....
651		do	Mixed iron and steel.....	Great Britain.....
652		Coal dumper.....	Steel blooms.....	United States.....
653	1	Coal handlers.....	Steel ingots.....	United States.....
654		Coal ligger.....	Mixed iron and steel.....	Continent of Europe.....
655	170	Coal inspector.....	Bituminous coal.....	Great Britain.....
656	43	Coal screeners.....	Pig iron.....	Northern district, U. S..
657		Coal suppliers.....	Mixed iron and steel.....	Continent of Europe.....
658		Coal unloaders.....	Mixed iron and steel.....	United States.....
659	101	Coal wheelers.....	Pig iron.....	Southern district, U. S..
660	7	do	Much bar iron.....	United States.....
661	1	do	Steel ingots.....	United States.....
662		do	Mixed iron and steel.....	United States.....
663		do	Mixed iron and steel.....	United States.....
664		do	Mixed iron and steel.....	Continent of Europe.....
665		do	Mixed iron and steel.....	Continent of Europe.....
666	101	Coal wheelers and firemen.....	Pig iron.....	Southern district, U. S..
667	1	do	Steel ingots.....	United States.....
668	1	Coal wheeler and iron handler.....	Steel ingots.....	United States.....
669	1	Coal wheeler and laborer.....	Steel ingots.....	United States.....
670	1	Coal wheeler and unloader.....	Steel ingots.....	United States.....
671	6	Coke boners.....	Coke.....	United States.....
672		Coke carriers.....	Steel ingots.....	Continent of Europe.....
673	23	Coke cleaner.....	Pig iron.....	Northern district, U. S..
674	23	Coke cleaner and ore breaker.....	Pig iron.....	Northern district, U. S..
675		Coke collectors.....	Mixed iron and steel.....	Great Britain.....
676	101	Coke drivers.....	Pig iron.....	Southern district, U. S..
677	101	Coke drivers and laborers.....	Pig iron.....	Southern district, U. S..
678	101	Coke driver and teamster.....	Pig iron.....	Southern district, U. S..

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.					Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.
		Different employéa.	Days of work done.		Earnings.		Necessary employéa.	Consequent average earnings per em- ployé.	
			Total.	Average.	Total.	Average.			
365	\$1.42	18	4,830	268	\$2,847	\$380	13.23	\$517	679
184	1.19½	96	2,599	27	3,108	32	14.12	220	680
305	1.44½	1	256	256	370	370	0.70	528	681
184	1.09½	29	493	17	541	19	2.68	202	682
365	1.46	2	545	273	795	398	1.49	532	683
313	1.70½	0	306	51	549	92	0.98	562	684
365	.53	1	346	346	180	180	0.95	190	685
230	3.10½	2	349	175	1,044	542	1.52	714	686
78	.57½	9	568	63	328	36	7.28	45	687
230	1.85	1	169	169	313	313	0.73	426	688
90	.69	0	477	80	829	55	5.30	62	689
313	1.87½	2	262	131	491	246	0.84	587	690
132	2.18	2	148	74	323	162	1.12	288	691
230	2.21½	2	370	185	1,100	595	1.61	740	692
168	1.00	1	142	142	142	142	0.85	168	693
313	.54	3	828	276	449	150	2.65	170	694
144	1.86	2	156	78	290	145	1.08	268	695
181	1.40	1	179	179	251	251	0.99	254	696
78	.56	10	561	56	313	31	7.19	44	697
122	1.25	1	94	94	117	117	0.77	152	698
313	1.60½	19	921	48	1,476	78	2.95	502	699
202	1.50	9	600	67	901	100	2.97	303	700
365	1.64½	1	326	326	535	535	0.89	599	701
313	1.91½	1	313	313	600	600	1.00	600	702
313	1.73	4	450	113	778	195	1.43	541	703
313	1.70	1	10	10	17	17	0.03	532	704
202	1.73½	1	15	15	26	26	0.07	350	705
313	1.45½	4	274	69	300	100	0.88	456	706
313	2.09½	1	128	128	268	268	0.41	655	707
313	1.66	1	124	124	206	206	0.40	520	708
202	1.30½	1	33	33	46	46	0.16	282	709
202	1.57½	1	146	146	230	230	0.72	318	710
313	.08½	9	2,126	236	1,411	157	6.79	208	711
313	.56½	1	280	280	155	155	0.89	173	712
313	1.37½	4	443	111	564	141	1.43	398	713
202	1.93½	2	128	64	248	124	0.63	391	714
202	1.68	2	202	101	339	170	1.00	339	715
202	2.00	1	118	118	236	236	0.58	404	716
313	1.12½	2	247	124	282	141	0.79	357	717
202	1.09	1	2	2	2	2	0.01	202	718
132	1.92	4	210	53	403	101	1.60	253	719
132	1.13½	1	75	75	85	85	0.57	160	720
230	2.00	2	245	123	491	246	1.07	461	721
230	2.57½	1	153	153	294	294	0.67	502	722
132	1.10	2	176	88	194	97	1.33	146	723
230	1.70	1	132	132	221	221	0.57	325	724
77	.44	1	70	70	31	31	0.91	34	725
78	.88	1	67	67	59	59	0.86	69	726
202	1.74½	3	327	109	570	190	1.62	352	727
168	1.75	1	137	137	248	248	0.82	304	728
155	1.00	2	113	57	103	51	0.73	140	729
313	2.22½	3	621	207	1,381	460	1.98	696	730
92	.26	1	82	82	21	21	0.89	24	731
313	.58½	7	1,083	155	631	90	3.46	182	732
48	.46	13	98	8	45	3	2.64	22	733
156	1.24	2	330	165	417	209	2.15	194	734
53	(a)	31	(a)	(a)	868	28	(a)	(a)	735
313	2.21	14	1,007	72	2,224	159	2.22	691	736
313	1.36½	8	171	21	233	29	0.54	426	737
313	1.49½	2	69	35	103	52	0.22	467	738
313	1.50	1	68	68	108	108	0.22	497	739
313	1.50	2	150	75	225	113	0.48	470	740
313	2.05	5	446	89	914	183	1.43	641	741
313	1.49	1	65	65	97	97	0.21	467	742
313	1.76	3	421	140	742	247	1.35	552	743
48	.42	12	405	34	171	14	8.46	20	744
53	.41½	6	250	42	109	18	4.73	23	745
155	1.44	7	360	51	519	74	2.32	223	746
156	1.8½	2	195	98	352	176	1.25	280	747

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XXV.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Man- ual num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
766		Crescent men.....	Steel ingots.....	Continent of Europe.....
767	1	Crushers.....	Steel ingots.....	United States.....
768		Capola fettlers and helpers.....	Mixed iron and steel.....	Great Britain.....
769	7	Capola firemen.....	Steel ingots.....	United States.....
770	7	Capola fireman's helpers.....	Steel ingots.....	United States.....
771	3	Capolmen.....	Steel ingots.....	United States.....
772		do.....	Mixed iron and steel.....	Great Britain.....
773		Casters.....	Steel billets.....	United States.....
774		do.....	Mixed iron and steel.....	Continent of Europe.....
775		do.....	Mixed iron and steel.....	Continent of Europe.....
776		do.....	Mixed iron and steel.....	Great Britain.....
777	26	Casters and casters' helpers.....	Bituminous coal.....	United States.....
778	26	Casters' helpers.....	Bituminous coal.....	United States.....
779		Casters and weighmen.....	Mixed iron and steel.....	Great Britain.....
780	26	Casters' helpers.....	Bituminous coal.....	United States.....
781	26	Casters' helper and driver.....	Bituminous coal.....	United States.....
782	26	Casters' helpers and loadmen.....	Bituminous coal.....	United States.....
783	26	Casters-down.....	Finished bar iron.....	Great Britain.....
784		do.....	Mixed iron and steel.....	Great Britain.....
785		Dealers.....	Coke.....	Continent of Europe.....
786	148	Deputy swarms.....	Bituminous coal.....	Dominion of Canada.....
787	178	do.....	Bituminous coal.....	Great Britain.....
788		Dippers.....	Mixed iron and steel.....	United States.....
789		do.....	Mixed iron and steel.....	Great Britain.....
790		Dipper and laborer.....	Mixed iron and steel.....	United States.....
791		Dipper and weighman.....	Mixed iron and steel.....	Great Britain.....
792		Doggers.....	Mixed iron and steel.....	Great Britain.....
793		do.....	Mixed iron and steel.....	Great Britain.....
794		Dogger and unloader.....	Mixed iron and steel.....	Great Britain.....
795		Dolomite breakers.....	Mixed iron and steel.....	Continent of Europe.....
796		Dolomite wheelers.....	Mixed iron and steel.....	Continent of Europe.....
797		Doorboys.....	Steel billets.....	United States.....
798		do.....	Steel blooms.....	United States.....
799		do.....	Steel rails.....	Continent of Europe.....
800		do.....	Mixed iron and steel.....	United States.....
801		do.....	Mixed iron and steel.....	United States.....
802		do.....	Mixed iron and steel.....	Continent of Europe.....
803		Door boy and laborer.....	Steel blooms.....	United States.....
804		Door boy and lay-over.....	Mixed iron and steel.....	United States.....
805		Door boys and sumpers.....	Mixed iron and steel.....	United States.....
806		Door boy and straightener.....	Mixed iron and steel.....	Continent of Europe.....
807		Door boy and table boy.....	Steel billets.....	United States.....
808		Door boy and transmitter.....	Steel billets.....	United States.....
809		Doorkeeper.....	Mixed iron and steel.....	Continent of Europe.....
810		Doormen.....	Pig iron.....	Continent of Europe.....
811		do.....	Steel ingots.....	Continent of Europe.....
812		Doorman and hooker-up.....	Steel blooms.....	United States.....
813	7	Doormen and laborers.....	Steel ingots.....	United States.....
814		do.....	Steel blooms.....	United States.....
815	7	Doorman and pusher.....	Steel ingots.....	United States.....
816		Doorman and telegraphman.....	Steel blooms.....	United States.....
817	7	Doorman and tester.....	Steel ingots.....	United States.....
818	7	Doorman and vessel repairer.....	Steel ingots.....	United States.....
819		Doublers.....	Mixed iron and steel.....	United States.....
820		Doubler sheet.....	Mixed iron and steel.....	United States.....
821		Douner and laborer.....	Mixed iron and steel.....	United States.....
822		Drag backs.....	Mixed iron and steel.....	United States.....
823		Drag-downs.....	Mixed iron and steel.....	United States.....
824		do.....	Mixed iron and steel.....	United States.....
825		Drag-down and heater.....	Mixed iron and steel.....	United States.....
826		Drag-offs.....	Mixed iron and steel.....	Great Britain.....
827	7	Drag-outs.....	Stack bar iron.....	United States.....
828	8	do.....	Stack bar iron.....	United States.....
829	17	do.....	Stack bar iron.....	United States.....
830	26	do.....	Stack bar iron.....	United States.....
831		do.....	Mixed iron and steel.....	United States.....
832		do.....	Mixed iron and steel.....	United States.....

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XL. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.	
		Different employés.	Days of work done.		Earnings.		Necessary employés.		Consequent average earnings per em- ployé.
			Total.	Average.	Total.	Average.			
77	\$0.86½	3	203	68	\$176	\$59	2.64	\$67	748
313	1.35	3	138	45	183	61	0.43	421	749
53	(a)	(b)	(a)	(a)	138	(b)	(a)	(a)	750
230	6.44½	2	378	189	2,437	1,219	1.64	1,483	751
230	4.21½	2	399	200	1,633	841	1.73	970	752
132	2.67½	4	316	79	1,163	291	2.40	485	753
53	.73	1	52	52	88	88	0.98	39	754
202	2.12½	7	727	104	2,272	325	2.60	631	755
92	.44	5	311	62	140	28	2.38	41	75
79	.70	10	637	64	447	45	8.06	55	757
48	.46½	1	45	45	21	21	0.94	22	758
313	2.35½	13	1,212	93	2,857	220	2.88	738	759
313	2.04½	3	421	140	800	287	1.35	639	760
48	(a)	2	(a)	(a)	177	89	(a)	(a)	761
313	1.83	15	905	60	1,654	110	2.39	572	762
313	1.53	1	141	141	216	216	0.45	479	763
313	1.87½	5	309	62	580	116	0.98	588	764
99	1.25	3	292	97	365	123	2.95	124	765
156	1.46½	4	527	132	773	193	2.37	229	766
365	.29	2	675	338	189	95	1.88	102	767
313	1.45	4	1,132	283	1,642	411	2.62	454	768
91	1.44½	13	1,056	81	1,524	117	11.00	131	769
313	2.36½	6	1,789	298	4,233	706	5.72	741	770
48	.62	4	127	32	79	20	2.68	30	771
313	1.94½	1	283	283	550	550	0.90	608	772
48	.48½	1	62	62	30	30	1.29	23	773
48	.53½	5	283	47	125	25	4.85	26	774
53	.60½	11	438	40	264	24	8.26	32	775
48	.48½	1	76	76	37	37	1.58	28	776
313	.48	11	2,274	207	1,097	100	7.27	151	777
313	.84½	8	1,574	197	542	68	8.03	106	778
202	.76½	24	1,450	60	1,110	46	7.17	155	779
182	.85	7	385	55	329	47	2.92	112	780
78	.19½	10	440	44	85	9	5.64	15	781
313	.76½	5	868	174	665	133	2.77	240	782
155	.80	15	374	25	188	13	2.41	78	783
92	.17½	44	1,541	35	268	6	16.75	16	784
144	1.00	1	7	7	7	7	0.05	144	785
155	.69½	1	33	33	23	23	0.21	106	786
155	.64	2	86	43	55	28	0.55	96	787
92	.33½	1	15	15	5	5	0.16	31	788
202	.90	1	111	111	100	100	0.55	182	789
202	1.26½	1	120	120	182	152	0.59	256	790
92	.63½	1	98	98	61	61	1.07	57	791
91	.60½	4	334	84	202	51	2.67	55	792
77	.70½	4	302	76	213	53	2.92	54	793
230	2.02	1	110	110	321	321	0.48	671	794
251	2.04½	2	46	23	94	47	0.18	513	795
251	1.81½	5	176	35	319	64	0.70	458	796
230	1.95½	1	43	43	84	84	0.19	449	797
230	3.45	1	80	80	276	276	0.35	794	798
230	1.62½	1	8	8	13	13	0.08	374	799
230	2.02	1	46	46	93	93	0.20	465	800
313	1.71	18	3,211	178	5,492	305	10.25	535	801
313	.95	1	83	83	31	31	0.11	294	802
313	(a)	1	(a)	(a)	16	16	(a)	(a)	803
155	1.00	2	32	16	32	16	0.21	155	804
287	1.69½	2	239	120	403	203	0.32	486	805
168	2.36	6	298	50	703	117	1.77	366	806
168	2.61	1	59	59	154	154	0.35	439	807
48	.59	5	120	24	71	14	2.50	28	808
143	1.78½	7	352	50	628	90	2.46	255	809
286	1.68	2	446	223	838	419	1.56	537	810
286	1.83	4	595	149	1,089	272	2.08	528	811
286	1.75	4	606	152	1,061	265	2.12	501	812
286	(a)	10	(a)	(a)	1,852	185	(a)	(a)	813
287	2.00	6	1,392	232	2,784	464	4.85	574	814

- a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
b Number of employees not given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

Each line shows the total of an occupation in an establishment. In a like occupation the firms for periods are of equal length. The establishments numbers relate to the cost of production program; the establishment was obtained. In referring from this table to those on production by means of

Month of year	Establishment number	Occupation	Industry	Locality
1906	1	Drug-outs—conducted	Mixed iron and steel	United States
1907	2	do	Mixed iron and steel	Continent of Europe
1908	3	do	Mixed iron and steel	Continent of Europe
1909	4	do	Mixed iron and steel	Great Britain
1910	5	Drug-out and hot-bank man	Mixed iron and steel	Great Britain
1911	6	Drug-out and laborer	Mixed iron and steel	Great Britain
1912	7	Drug-outs and lay-overs	Mixed iron and steel	United States
1913	8	Drawers	Steel blooms	United States
1914	9	do	Mixed iron and steel	United States
1915	10	do	Coke	United States
1916	11	do	Coke	United States
1917	12	do	Coke	United States
1918	13	do	Coke	United States
1919	14	do	Coke	United States
1920	15	do	Coke	United States
1921	16	Drawer and elevator tender	Coke	United States
1922	17	Drawers and forkers	Coke	United States
1923	18	do	Coke	United States
1924	19	Drawer and heater's helper	Steel blooms	United States
1925	20	Drawers and laborers	Coke	United States
1926	21	do	Coke	United States
1927	22	do	Coke	United States
1928	23	Drawer and mason's helper	Coke	United States
1929	24	Drawer and puddler's helper	Mixed iron and steel	United States
1930	25	Drawer-back	Mixed iron and steel	United States
1931	26	Drawer back and twoper	Mixed iron and steel	United States
1932	27	Drawers	Steel rails	Continent of Europe
1933	28	Drawers' helpers	Steel rails	Continent of Europe
1934	29	Driers	Steel ingots	United States
1935	30	Drift cutters and miners	Iron ore	United States
1936	31	Drill boys	Iron ore	United States
1937	32	do	Iron ore	United States
1938	33	Drill carrier	Mixed iron and steel	Great Britain
1939	34	Drill flers	Mixed iron and steel	Great Britain
1940	35	Drill grinder	Mixed iron and steel	United States
1941	36	Drill grinder's helper	Mixed iron and steel	United States
1942	37	Drill runner	Iron ore	United States
1943	38	Drill sharpeners	Iron ore	United States
1944	39	Drillers	Steel rails	Continent of Europe
1945	40	do	Mixed iron and steel	Great Britain
1946	41	do	Mixed iron and steel	Great Britain
1947	42	do	Bituminous coal	United States
1948	43	do	Bituminous coal	United States
1949	44	do	Iron ore	United States
1950	45	do	Iron ore	United States
1951	46	do	Iron ore	United States
1952	47	do	Iron ore	United States
1953	48	Drillers and miners	Iron ore	United States
1954	49	Driller and trapper	Bituminous coal	United States
1955	50	Drillers helpers	Mixed iron and steel	Great Britain
1956	51	do	Iron ore	United States
1957	52	do	Iron ore	United States
1958	53	Drillsmith	Steel rails	Continent of Europe
1959	54	Drivers	Pig iron	Northern district, U. S.
1960	55	do	Pig iron	Northern district, U. S.
1961	56	do	Pig iron	Southern district, U. S.
1962	57	do	Pig iron	Southern district, U. S.
1963	58	do	Mixed iron and steel	United States
1964	59	do	Mixed iron and steel	Continent of Europe
1965	60	do	Bituminous coal	United States
1966	61	do	Bituminous coal	United States
1967	62	do	Bituminous coal	United States
1968	63	do	Bituminous coal	United States
1969	64	do	Bituminous coal	United States
1970	65	do	Bituminous coal	United States
1971	66	do	Bituminous coal	United States
1972	67	do	Bituminous coal	United States
1973	68	do	Bituminous coal	United States
1974	69	do	Bituminous coal	United States
1975	70	do	Bituminous coal	United States
1976	71	do	Bituminous coal	United States
1977	72	do	Bituminous coal	United States
1978	73	do	Bituminous coal	United States
1979	74	do	Bituminous coal	United States
1980	75	do	Bituminous coal	United States
1981	76	do	Bituminous coal	United States
1982	77	do	Bituminous coal	United States
1983	78	do	Bituminous coal	United States
1984	79	do	Bituminous coal	United States
1985	80	do	Bituminous coal	United States
1986	81	do	Bituminous coal	United States
1987	82	do	Bituminous coal	United States
1988	83	do	Bituminous coal	United States
1989	84	do	Bituminous coal	United States
1990	85	do	Bituminous coal	United States
1991	86	do	Bituminous coal	United States
1992	87	do	Bituminous coal	United States
1993	88	do	Bituminous coal	United States
1994	89	do	Bituminous coal	United States
1995	90	do	Bituminous coal	United States
1996	91	do	Bituminous coal	United States
1997	92	do	Bituminous coal	United States
1998	93	do	Bituminous coal	United States
1999	94	do	Bituminous coal	United States
2000	95	do	Bituminous coal	United States
2001	96	do	Bituminous coal	United States
2002	97	do	Bituminous coal	United States
2003	98	do	Bituminous coal	United States
2004	99	do	Bituminous coal	United States
2005	100	do	Bituminous coal	United States
2006	101	do	Bituminous coal	United States
2007	102	do	Bituminous coal	United States
2008	103	do	Bituminous coal	United States
2009	104	do	Bituminous coal	United States
2010	105	do	Bituminous coal	United States
2011	106	do	Bituminous coal	United States
2012	107	do	Bituminous coal	United States
2013	108	do	Bituminous coal	United States
2014	109	do	Bituminous coal	United States
2015	110	do	Bituminous coal	United States
2016	111	do	Bituminous coal	United States
2017	112	do	Bituminous coal	United States
2018	113	do	Bituminous coal	United States
2019	114	do	Bituminous coal	United States
2020	115	do	Bituminous coal	United States
2021	116	do	Bituminous coal	United States
2022	117	do	Bituminous coal	United States
2023	118	do	Bituminous coal	United States
2024	119	do	Bituminous coal	United States
2025	120	do	Bituminous coal	United States
2026	121	do	Bituminous coal	United States
2027	122	do	Bituminous coal	United States
2028	123	do	Bituminous coal	United States
2029	124	do	Bituminous coal	United States
2030	125	do	Bituminous coal	United States
2031	126	do	Bituminous coal	United States
2032	127	do	Bituminous coal	United States
2033	128	do	Bituminous coal	United States
2034	129	do	Bituminous coal	United States
2035	130	do	Bituminous coal	United States
2036	131	do	Bituminous coal	United States
2037	132	do	Bituminous coal	United States
2038	133	do	Bituminous coal	United States
2039	134	do	Bituminous coal	United States
2040	135	do	Bituminous coal	United States
2041	136	do	Bituminous coal	United States
2042	137	do	Bituminous coal	United States
2043	138	do	Bituminous coal	United States
2044	139	do	Bituminous coal	United States
2045	140	do	Bituminous coal	United States
2046	141	do	Bituminous coal	United States
2047	142	do	Bituminous coal	United States
2048	143	do	Bituminous coal	United States
2049	144	do	Bituminous coal	United States
2050	145	do	Bituminous coal	United States
2051	146	do	Bituminous coal	United States
2052	147	do	Bituminous coal	United States
2053	148	do	Bituminous coal	United States
2054	149	do	Bituminous coal	United States
2055	150	do	Bituminous coal	United States
2056	151	do	Bituminous coal	United States
2057	152	do	Bituminous coal	United States
2058	153	do	Bituminous coal	United States
2059	154	do	Bituminous coal	United States
2060	155	do	Bituminous coal	United States
2061	156	do	Bituminous coal	United States
2062	157	do	Bituminous coal	United States
2063	158	do	Bituminous coal	United States
2064	159	do	Bituminous coal	United States
2065	160	do	Bituminous coal	United States
2066	161	do	Bituminous coal	United States
2067	162	do	Bituminous coal	United States
2068	163	do	Bituminous coal	United States
2069	164	do	Bituminous coal	United States
2070	165	do	Bituminous coal	United States
2071	166	do	Bituminous coal	United States
2072	167	do	Bituminous coal	United States
2073	168	do	Bituminous coal	United States
2074	169	do	Bituminous coal	United States
2075	170	do	Bituminous coal	United States
2076	171	do	Bituminous coal	United States
2077	172	do	Bituminous coal	United States
2078	173	do	Bituminous coal	United States
2079	174	do	Bituminous coal	United States
2080	175	do	Bituminous coal	United States
2081	176	do	Bituminous coal	United States
2082	177	do	Bituminous coal	United States
2083	178	do	Bituminous coal	United States
2084	179	do	Bituminous coal	United States
2085	180	do	Bituminous coal	United States
2086	181	do	Bituminous coal	United States
2087	182	do	Bituminous coal	United States
2088	183	do	Bituminous coal	United States
2089	184	do	Bituminous coal	United States
2090	185	do	Bituminous coal	United States
2091	186	do	Bituminous coal	United States
2092	187	do	Bituminous coal	United States
2093	188	do	Bituminous coal	United States
2094	189	do	Bituminous coal	United States
2095	190	do	Bituminous coal	United States
2096	191	do	Bituminous coal	United States
2097	192	do	Bituminous coal	United States
2098	193	do	Bituminous coal	United States
2099	194	do	Bituminous coal	United States
2100	195	do	Bituminous coal	United States
2101	196	do	Bituminous coal	United States
2102	197	do	Bituminous coal	United States
2103	198	do	Bituminous coal	United States
2104	199	do	Bituminous coal	United States
2105	200	do	Bituminous coal	United States
2106	201	do	Bituminous coal	United States
2107	202	do	Bituminous coal	United States
2108	203	do	Bituminous coal	United States
2109	204	do	Bituminous coal	United States
2110	205	do	Bituminous coal	United States
2111	206	do	Bituminous coal	United States
2112	207	do	Bituminous coal	United States
2113	208	do	Bituminous coal	United States
2114	209	do	Bituminous coal	United States
2115	210	do	Bituminous coal	United States
2116	211	do	Bituminous coal	United States
2117	212	do	Bituminous coal	United States
2118	213	do	Bituminous coal	United States
2119	214	do	Bituminous coal	United States
2120	215	do	Bituminous coal	United States
2121	216	do	Bituminous coal	United States
2122	217	do	Bituminous coal	United States
2123	218	do	Bituminous coal	United States
2124	219	do	Bituminous coal	United States
2125	220	do	Bituminous coal	United States
2126	221	do	Bituminous coal	United States
2127	222	do	Bituminous coal	United States
2128	223	do	Bituminous coal	United States
2129	224	do	Bituminous coal	United States
2130	225	do	Bituminous coal	United States
2131	226	do	Bituminous coal	United States
2132	227	do	Bituminous coal	United States
2133	228	do	Bituminous coal	United States
2134	229	do	Bituminous coal	United States
2135	230	do	Bituminous coal	United States
2136	231	do	Bituminous coal	United States
2137	232	do	Bituminous coal	United States
2138	233	do	Bituminous coal	United States
2139	234	do	Bituminous coal	United States
2140	235	do	Bituminous coal	United States
2141	236	do	Bituminous coal	United States
2142	237	do	Bituminous coal	United States
2143	238	do	Bituminous coal	United States
2144	239	do	Bituminous coal	United States
2145	240	do	Bituminous coal	United States
2146	241	do	Bituminous coal	United States
2147	242	do	Bituminous coal	United States
2148	243	do	Bituminous coal	United States
2149	244	do	Bituminous coal	United States
2150	245	do	Bituminous coal	United States
2151	246	do	Bituminous coal	United States
2152	247	do	Bituminous coal	United States
2153	248	do	Bituminous coal	United States
2154	249	do	Bituminous coal	United States
2155	250	do	Bituminous coal	United States
2156	251	do	Bituminous coal	United States
2157	252	do	Bituminous coal	United States
2158	253	do	Bituminous coal	United States
2159	254	do	Bituminous coal	United States
2160	255	do	Bituminous coal	United States
2161	256	do	Bituminous coal	United States
2162	257	do	Bituminous coal	United States
2163	258	do	Bituminous coal	United States
2164	259	do	Bituminous coal	United States
2165	260	do	Bituminous coal	United States
2166	261	do	Bituminous coal	United States
2167	262	do	Bituminous coal	United States
2168	263	do	Bituminous coal	United States
2169	264	do	Bituminous coal	United States
2170	265	do	Bituminous coal	United States
2171	266	do	Bituminous coal	United States
2172	267	do	Bituminous coal	United States
2173	268	do	Bituminous coal	United States
2174	269	do	Bituminous coal	United States
2175	270	do	Bituminous coal	United States
2176	271	do	Bituminous coal	United States
2177	272	do	Bituminous coal	United States
2178	273	do	Bituminous coal	United States
2179	274	do	Bituminous coal	United States
2180	275	do	Bituminous coal	United States
2181	276	do	Bituminous coal	United States
2182	277	do	Bituminous coal	United States
2183	278	do	Bituminous coal	United States
2184	279	do	Bituminous coal	United States
2185	280	do	Bituminous coal	United States
2186	281	do	Bituminous coal	United States
2187	282	do	Bituminous coal	United States
2188	283	do	Bituminous coal	United States
2189	284	do	Bituminous coal	United States
2190	285	do	Bituminous coal	United States
2191	286	do	Bituminous coal	United States
2192	287	do	Bituminous coal	United States
2193	288	do	Bituminous coal	United States
2194	289	do		

TIME AND EARNINGS, BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless the establishment number is given no statement of cost of production. These numbers, note should be taken of the industry, as a new series of numbers is used for each h.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employees.	Days of work done.		Earnings.		Necessary employees.		Consequent average earnings per employee.
			Total.	Average.	Total.	Average.			
108	\$1.22	12	904	75	\$1,650	\$138	5.38	\$207	816
212	.90	25	5,219	235	4,834	141	24.26	188	816
313	.68	24	5,285	220	5,067	187	16.98	181	817
46	.60	6	220	37	123	23	4.66	29	818
48	.57	1	47	47	27	27	0.66	28	819
49	.54	1	46	46	35	35	0.90	26	820
155	1.19	2	131	61	181	73	0.79	184	821
230	2.78	7	1,300	181	4,654	686	5.51	871	822
313	1.63	13	1,817	140	2,988	228	5.81	811	823
92	1.70	104	2,419	23	4,116	46	26.32	166	824
313	1.63	216	16,771	80	30,718	146	53.60	872	825
312	1.64	107	13,129	123	21,532	201	41.95	813	826
313	1.63	49	4,524	92	6,717	137	14.46	465	827
312	1.20	59	2,930	50	5,712	63	9.29	385	828
285	1.20	18	4,753	264	5,705	317	13.07	438	829
212	1.12	1	119	119	123	123	0.55	350	830
213	1.67	4	288	97	571	143	1.24	461	831
313	1.10	6	623	156	765	188	1.90	373	832
132	2.06	1	93	93	379	379	0.70	380	833
212	1.49	1	63	23	94	47	0.29	467	834
219	1.82	1	14	14	27	27	0.04	604	835
313	1.28	13	1,157	64	1,381	77	3.60	276	836
313	1.52	1	209	209	319	319	0.67	478	837
280	(a)	1	(a)	(a)	442	442	(a)	(a)	838
219	1.36	1	253	253	345	345	0.81	427	839
312	1.16	1	237	237	275	275	0.78	368	840
78	.67	8	590	74	898	59	7.50	53	841
78	.94	9	578	64	106	23	7.41	27	842
312	1.36	2	343	114	447	100	1.09	406	843
312	2.25	2	402	154	1,037	244	1.47	703	844
313	.68	7	421	60	706	39	1.25	198	845
312	1.23	2	261	131	328	163	0.33	361	846
46	.32	1	40	40	13	13	0.23	16	847
63	.59	3	160	53	84	31	2.08	31	848
312	1.62	1	11	11	22	22	0.04	574	849
312	1.18	1	11	11	13	13	0.04	370	850
312	2.25	1	7	7	16	16	0.02	715	851
312	1.60	4	858	216	1,441	360	2.74	826	852
78	.57	2	132	67	76	38	1.71	46	853
46	(a)	13	(a)	(a)	228	18	(a)	(a)	854
63	(a)	14	(a)	(a)	462	33	(a)	(a)	855
312	1.15	1	8	8	12	12	0.02	620	856
312	1.64	2	297	37	371	46	0.95	391	857
312	1.64	2	89	20	162	54	0.28	876	858
313	1.76	1	18	18	31	31	0.06	539	859
312	1.65	16	2,353	123	2,734	207	7.20	619	860
312	2.00	1	84	84	292	292	0.27	1,087	861
312	1.55	23	5,042	229	7,844	267	18.11	467	862
313	1.14	1	20	20	33	33	0.09	356	863
52	(a)	17	(a)	(a)	441	26	(a)	(a)	864
312	1.00	2	231	100	331	160	1.00	313	865
312	1.40	14	2,774	162	3,193	227	7.27	438	866
78	.54	1	40	40	25	25	0.50	42	867
312	1.50	2	406	218	784	367	1.55	483	868
92	.00	1	92	92	55	55	1.00	55	869
285	1.15	2	362	181	410	205	0.60	413	870
285	1.05	4	700	175	738	184	1.22	234	871
312	1.02	2	747	274	1,210	605	2.39	807	872
312	.54	1	130	130	75	75	0.44	169	873
166	1.46	8	351	106	1,247	154	8.39	232	874
312	1.89	4	168	43	318	80	0.54	502	875
312	(a)	12	(a)	(a)	2,609	142	(a)	(a)	876
312	1.00	9	487	95	1,793	199	2.75	622	877
312	1.91	29	2,672	127	7,030	242	11.73	589	878
312	1.85	8	1,340	168	2,684	211	4.22	340	879
312	1.03	20	2,626	67	5,087	130	8.39	840	880
312	1.05	25	2,781	92	4,675	180	7.61	612	881
312	.85	5	761	152	482	96	2.43	185	882

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

Each line shows the total of an occupation in an establishment. In a like occupation the facts for periods are of equal length. The establishment numbers relate to the cost of production program; the establishment was obtained. In referring from this table to those on production by means of

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TIME AND EARNINGS, BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless Tables I to XI. Where no establishment number is given no statement of cost of production; these numbers, note should be taken of the industry, as a new series of numbers is used for each.)

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employées.	Days of work done.		Earnings.		Necessary employées.		Consequent average earnings per employé.
			Total.	Average.	Total.	Average.			
168	\$1.62½	15	804	53	\$1,650	\$110	5.38	\$207	168
212	.90	25	3,319	133	4,894	161	24.28	189	212
212	.88	24	3,253	136	3,087	127	16.08	181	212
46	.80½	8	220	27	123	15	4.58	29	46
46	.87½	1	47	47	27	27	0.96	29	46
48	.84½	1	46	46	26	26	0.86	26	48
155	1.10	2	121	61	144	72	0.78	184	155
230	3.75½	7	1,258	181	4,884	696	5.51	871	230
213	1.63½	13	1,817	140	2,968	228	5.61	811	213
92	1.70	104	2,419	23	4,110	49	24.20	186	92
212	1.63	216	16,771	60	30,716	149	53.50	873	212
218	1.84	107	13,129	123	21,583	201	41.86	812	218
212	1.68½	46	4,574	62	6,717	137	14.44	445	212
212	1.26½	50	2,039	50	2,712	62	0.39	395	212
265	1.26	16	4,783	264	5,702	317	12.02	428	265
212	1.13	1	116	116	123	123	0.36	350	212
212	1.47	4	268	97	571	143	1.24	461	212
212	1.18½	4	623	156	742	186	1.99	279	212
133	2.06	1	92	92	279	279	0.70	296	133
212	1.49	2	63	31	94	47	0.29	407	212
212	1.83	1	14	14	27	27	0.04	904	212
212	1.29	18	1,157	64	1,361	77	3.66	376	212
212	1.62½	1	209	209	219	219	0.67	827	212
286	(a)	1	(a)	(a)	442	442	(a)	(a)	286
212	1.98½	1	253	253	245	245	0.81	427	212
212	1.16	1	237	237	275	275	0.76	363	212
79	.67½	8	590	74	899	66	7.56	53	79
79	.84½	9	576	64	196	22	7.41	27	79
212	1.30½	3	343	114	447	149	1.09	406	212
219	2.34½	3	492	164	1,087	360	1.47	763	219
212	.62	7	421	60	296	28	1.16	196	212
212	1.25	2	281	121	228	163	0.83	391	212
48	.82½	1	40	40	13	13	0.83	16	48
53	.59	3	160	68	94	31	2.08	21	53
212	1.63½	1	13	13	22	22	0.94	674	212
212	1.13	1	11	11	13	13	0.64	270	212
212	2.28	?	7	7	16	16	0.02	715	212
212	1.68	4	856	215	1,441	360	2.74	826	212
78	.57	2	133	67	76	38	1.71	46	78
48	(a)	13	(a)	(a)	229	18	(a)	(a)	48
53	(a)	14	(a)	(a)	462	23	(a)	(a)	53
212	2.00	1	6	6	12	12	0.62	859	212
212	1.25	8	267	37	371	46	0.86	391	212
212	1.84	3	86	29	163	54	0.28	576	212
212	1.75	1	18	18	31	31	0.06	539	212
212	1.63½	18	2,253	125	3,734	207	7.29	519	212
212	3.69	1	84	84	293	293	6.27	1,064	212
212	1.55½	23	5,042	229	7,844	387	16.11	467	212
212	1.14	1	29	29	23	23	0.69	356	212
38	(a)	17	(a)	(a)	441	26	(a)	(a)	38
212	1.40	2	331	166	331	166	1.06	313	212
212	1.40	14	2,274	163	3,189	227	7.27	436	212
79	.54½	1	46	46	25	25	0.56	42	79
212	1.50	2	496	248	734	367	1.58	482	212
92	.60	1	92	92	55	55	1	55	92
265	1.15	2	362	181	410	205	1	413	265
265	1.05	4	760	175	736	184	1	234	265
212	1.69	2	747	374	1,210	605	1.39	567	212
212	.54	1	139	139	75	75	0.44	169	212
156	1.46½	8	851	106	1,247	156	6.39	232	156
212	1.39½	4	168	42	319	60	0.54	562	212
212	(a)	16	(a)	(a)	2,569	141	(a)	(a)	212
212	1.06½	9	337	85	1,793	149	2.75	622	212
212	1.81½	29	2,672	127	7,030	242	11.72	599	212
212	1.25	8	1,340	168	2,484	311	4.28	520	212
212	1.23½	39	2,626	67	2,667	130	8.39	644	212
212	1.05½	26	2,781	102	4,673	180	7.61	612	212
212	.65	8	761	152	483	60	2.43	185	212

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XXXI.—SUMMARY OF ACTUAL AND THEORETICAL

(Black line shows the total of an occupation in an establishment. In a line occupation the data for the parties are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In mining from this table to show the production by region of

Man- power of establishment	Est- ab- lish- ment num- ber	Occupation	Industry	Location
688	154	Drivers—conducted	Bituminous coal	Continent of Europe
689	178	do	Bituminous coal	Great Britain
690	8	do	Coke	United States
691	1	do	Iron ore	United States
692	42	do	Iron ore	United States
693	44	do	Iron ore	United States
694	43	do	Iron ore	United States
695	45	do	Iron ore	United States
696	46	do	Iron ore	United States
697	51	do	Iron ore	United States
698	54	do	Iron ore	United States
699	61	do	Iron ore	United States
700		Driver, boss	Bituminous coal	United States
701	100	Driver and signman	Bituminous coal	United States
702	86	Driver and hooker-on	Bituminous coal	United States
703	144	Drivers and laborers	Bituminous coal	Dominion of Canada
704	1	do	Iron ore	United States
705	25	Drivers and loaders	Bituminous coal	United States
706	100	Drivers and miners	Bituminous coal	United States
707		do	Bituminous coal	United States
708		do	Bituminous coal	United States
709		do	Bituminous coal	United States
710	45	do	Iron ore	United States
711	46	do	Iron ore	United States
712	143	Driver and miners' helper	Bituminous coal	Dominion of Canada
713		Driver and slag hauler	Bituminous coal	United States
714	100	Driver and trapper	Bituminous coal	United States
715	1	Droppers	Steel ingots	United States
716		do	Steel billets	United States
717	13	Dry boys	Iron ore	United States
718	73	Drymen	Iron ore	United States
719	27	Dumpers	Pig iron	Northern district, U. S.
720	54	do	Pig iron	Northern district, U. S.
721	160	do	Pig iron	Southern district, U. S.
722	1	do	Steel ingots	United States
723		do	Mixed iron and steel	United States
724		do	Mixed iron and steel	Continent of Europe
725		do	Mixed iron and steel	Continent of Europe
726	18	do	Bituminous coal	United States
727	54	do	Bituminous coal	United States
728	109	do	Bituminous coal	United States
729		do	Bituminous coal	United States
730		do	Bituminous coal	United States
731		do	Bituminous coal	United States
732	150	do	Bituminous coal	Continent of Europe
733	6	do	Coke	United States
734	43	do	Iron ore	United States
735	31	do	Iron ore	United States
736	73	do	Iron ore	United States
737		Dumper, boss	Bituminous coal	United States
738		Dumper and heaters' helper	Mixed iron and steel	United States
739	1	Dumpers and iron handlers	Steel ingots	United States
740	50	Dumpers and laborers	Pig iron	Northern district, U. S.
741	1	do	Steel ingots	United States
742	24	Dumper and loader	Bituminous coal	United States
743		Dumpers and miners	Bituminous coal	United States
744	43	do	Iron ore	United States
745		Dumper and oiler	Bituminous coal	United States
746	73	Dumper and runner's helper	Iron ore	United States
747		Dumper and trimmer	Bituminous coal	United States
748	73	Dumping clerks	Iron ore	United States
749		Elevator tenders	Steel ingots	Continent of Europe
750		do	Steel ingots	Continent of Europe
751		do	Steel rails	Continent of Europe
752		do	Mixed iron and steel	Continent of Europe
753	170	do	Bituminous coal	Great Britain
754	28	do	Coke	United States
755		Engine drivers	Mixed iron and steel	Great Britain
756	30	Engine tenders, blast	Pig iron	Great Britain

TIME AND EARNINGS BY OCCUPATIONS--Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless, Tables I to XI. Where no establishment number is given no statement of cost of production. These numbers, note should be taken of the industry, as a new series of numbers is used for each.)

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Margin bar.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
77	90.53	0	476	53	9254	928	6.18	911	928
81	1.00	2	83	42	73	37	6.02	78	884
92	1.09	0	287	28	287	28	5.12	92	928
219	1.03	20	2,578	84	2,081	98	5.24	214	928
219	1.02	41	7,425	181	6,857	167	22.75	228	927
217	1.25	4	512	128	641	160	2.38	217	928
219	1.23	31	2,195	103	2,935	140	7.01	419	928
219	1.35	2	578	183	780	780	1.85	422	928
219	1.15	1	300	300	255	255	0.99	300	928
213	1.00	1	15	15	8	8	0.05	107	928
155	1.50	4	82	21	41	10	0.54	77	928
219	2.30	1	280	280	683	683	0.92	718	924
219	1.03	1	146	146	151	151	0.47	224	928
219	1.28	1	171	171	216	216	0.55	295	928
219	1.00	9	400	225	228	183	1.80	218	927
219	1.12	1	8	8	9	9	0.03	232	928
219	1.81	2	176	88	267	134	0.56	478	928
219	(a)	2	(a)	(a)	652	428	(a)	(a)	900
219	(a)	2	(a)	(a)	80	80	(a)	(a)	901
219	2.02	1	92	92	180	180	0.20	633	928
219	(a)	7	(a)	(a)	1,082	290	(a)	(a)	903
219	1.17	2	418	209	490	245	1.34	267	904
219	1.84	2	177	88	277	139	0.57	490	928
219	1.07	1	237	237	243	243	0.76	221	908
219	1.43	1	79	79	113	113	0.23	449	907
219	1.83	1	142	142	90	90	0.48	106	908
219	1.51	2	180	90	264	132	0.63	473	908
202	1.52	2	21	11	22	16	0.10	308	910
219	2.00	2	307	154	307	154	0.96	212	911
219	1.48	2	758	230	1,117	273	2.45	455	912
206	1.48	8	907	181	1,271	254	2.48	511	913
205	1.50	1	843	843	580	580	0.99	553	914
203	1.08	8	617	216	688	229	1.77	218	915
219	1.31	10	1,408	140	1,833	184	4.48	409	916
155	1.28	1	43	43	82	82	0.27	192	917
77	1.02	2	147	74	82	46	1.91	48	918
92	1.23	1	81	81	21	21	1.00	81	919
150	1.30	2	291	146	437	219	1.84	237	920
219	1.50	1	50	50	75	75	0.10	470	921
219	2.41	4	822	203	1,184	146	2.63	442	922
219	1.81	2	301	151	483	242	0.96	504	923
219	1.54	8	290	97	440	149	0.93	481	924
219	1.49	9	761	83	1,142	127	2.44	468	925
77	1.47	2	153	51	65	23	1.90	83	926
92	1.28	3	202	68	281	67	2.20	118	927
219	1.50	10	1,092	109	1,689	164	3.43	470	928
219	1.25	1	185	185	224	724	0.30	879	929
219	1.87	14	1,501	107	2,811	201	4.81	586	930
219	2.25	1	208	208	438	438	0.86	881	931
155	1.48	1	53	53	77	77	0.34	230	932
219	1.30	2	79	39	119	40	0.25	471	933
205	1.50	1	191	191	292	292	0.33	549	934
219	1.30	1	10	10	13	13	0.03	407	935
219	1.43	1	43	43	118	118	0.27	449	936
219	(a)	1	(a)	(a)	300	300	(a)	(a)	937
219	1.55	2	310	155	541	180	1.12	485	938
219	1.29	1	134	134	173	173	0.43	404	939
219	1.81	1	88	88	168	168	0.28	508	940
219	1.75	1	82	82	144	144	0.26	654	941
219	2.18	2	280	140	618	309	0.91	676	942
77	1.33	2	128	64	41	21	1.70	35	943
79	1.40	4	213	53	85	21	2.73	31	944
76	1.00	4	375	94	190	48	2.53	64	945
92	1.28	10	307	30	167	17	4.80	28	946
91	1.61	0	431	75	277	46	4.06	56	947
219	1.25	3	14	5	19	6	0.05	425	948
156	1.08	3	512	171	593	198	3.48	170	949
91	1.75	2	182	91	137	69	2.00	90	950

* Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL.

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mac- inal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
931	101	Engine tender, electric	Pig iron	Great Britain
932	101	Engine tender, lift	Pig iron	Great Britain
933	101	Engine wipers	Pig iron	Northern district, U. S.
934	101	do	Pig iron	Southern district, U. S.
935	101	do	Pig iron	Northern district, U. S.
936	101	do	Pig iron	Northern district, U. S.
937	101	do	Pig iron	Northern district, U. S.
938	101	do	Pig iron	Northern district, U. S.
939	101	do	Pig iron	Northern district, U. S.
940	101	do	Pig iron	Northern district, U. S.
941	101	do	Pig iron	Northern district, U. S.
942	101	do	Pig iron	Northern district, U. S.
943	101	do	Pig iron	Northern district, U. S.
944	101	do	Pig iron	Northern district, U. S.
945	101	do	Pig iron	Southern district, U. S.
946	101	do	Pig iron	Southern district, U. S.
947	101	do	Pig iron	Southern district, U. S.
948	101	do	Pig iron	Southern district, U. S.
949	101	do	Pig iron	Southern district, U. S.
950	101	do	Pig iron	Southern district, U. S.
951	101	do	Pig iron	Southern district, U. S.
952	101	do	Pig iron	Southern district, U. S.
953	101	do	Pig iron	Southern district, U. S.
954	101	do	Pig iron	Southern district, U. S.
955	101	do	Pig iron	Southern district, U. S.
956	101	do	Pig iron	Southern district, U. S.
957	101	do	Pig iron	Southern district, U. S.
958	101	do	Pig iron	Southern district, U. S.
959	101	do	Pig iron	Southern district, U. S.
960	101	do	Pig iron	Southern district, U. S.
961	101	do	Pig iron	Southern district, U. S.
962	101	do	Pig iron	Southern district, U. S.
963	101	do	Pig iron	Southern district, U. S.
964	101	do	Pig iron	Southern district, U. S.
965	101	do	Pig iron	Southern district, U. S.
966	101	do	Pig iron	Southern district, U. S.
967	101	do	Pig iron	Southern district, U. S.
968	101	do	Pig iron	Southern district, U. S.
969	101	do	Pig iron	Southern district, U. S.
970	101	do	Pig iron	Southern district, U. S.
971	101	do	Pig iron	Southern district, U. S.
972	101	do	Pig iron	Southern district, U. S.
973	101	do	Pig iron	Southern district, U. S.
974	101	do	Pig iron	Southern district, U. S.
975	101	do	Pig iron	Southern district, U. S.
976	101	do	Pig iron	Southern district, U. S.
977	101	do	Pig iron	Southern district, U. S.
978	101	do	Pig iron	Southern district, U. S.
979	101	do	Pig iron	Southern district, U. S.
980	101	do	Pig iron	Southern district, U. S.
981	101	do	Pig iron	Southern district, U. S.
982	101	do	Pig iron	Southern district, U. S.
983	101	do	Pig iron	Southern district, U. S.
984	101	do	Pig iron	Southern district, U. S.
985	101	do	Pig iron	Southern district, U. S.
986	101	do	Pig iron	Southern district, U. S.
987	101	do	Pig iron	Southern district, U. S.
988	101	do	Pig iron	Southern district, U. S.
989	101	do	Pig iron	Southern district, U. S.
990	101	do	Pig iron	Southern district, U. S.
991	101	do	Pig iron	Southern district, U. S.
992	101	do	Pig iron	Southern district, U. S.
993	101	do	Pig iron	Southern district, U. S.
994	101	do	Pig iron	Southern district, U. S.
995	101	do	Pig iron	Southern district, U. S.
996	101	do	Pig iron	Southern district, U. S.
997	101	do	Pig iron	Southern district, U. S.
998	101	do	Pig iron	Southern district, U. S.
999	101	do	Pig iron	Southern district, U. S.
1000	101	do	Pig iron	Southern district, U. S.
1001	101	do	Pig iron	Southern district, U. S.
1002	101	do	Pig iron	Southern district, U. S.
1003	101	do	Pig iron	Southern district, U. S.
1004	101	do	Pig iron	Southern district, U. S.
1005	101	do	Pig iron	Southern district, U. S.
1006	101	do	Pig iron	Southern district, U. S.
1007	101	do	Pig iron	Southern district, U. S.
1008	101	do	Pig iron	Southern district, U. S.
1009	101	do	Pig iron	Southern district, U. S.
1010	101	do	Pig iron	Southern district, U. S.
1011	101	do	Pig iron	Southern district, U. S.
1012	101	do	Pig iron	Southern district, U. S.
1013	101	do	Pig iron	Southern district, U. S.
1014	101	do	Pig iron	Southern district, U. S.
1015	101	do	Pig iron	Southern district, U. S.
1016	101	do	Pig iron	Southern district, U. S.
1017	101	do	Pig iron	Southern district, U. S.
1018	101	do	Pig iron	Southern district, U. S.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
91	\$0.69	1	124	124	985	985	1.38	961	
91	.91½	2	183	91	166	83	2.00	952	
366	1.50	2	696	828	678	486	1.80	943	
184	1.15	4	209	52	247	61	1.14	954	
263	2.00	1	17	17	81	81	0.05	1,006	
805	2.28	2	613	307	1,379	690	1.68	821	
365	1.90½	2	784	392	1,565	782	2.14	729	
385	3.40	2	729	365	1,724	863	2.00	903	
167	2.00	2	234	167	968	324	2.00	834	
385	1.78½	2	731	366	1,306	654	2.00	653	
181	2.80½	2	514	171	1,328	448	2.84	471	
485	2.54½	10	2,943	294	7,486	750	5.97	990	
92	1.08	3	173	58	286	143	1.67	153	
123	1.84½	3	244	81	377	126	2.60	180	
324	2.02½	3	941	314	1,701	569	2.51	676	
184	2.25	3	297	149	808	269	1.01	414	
203	1.70½	3	563	188	905	304	1.54	645	
365	1.88	2	714	357	1,321	661	1.98	675	
365	1.75	2	716	358	1,283	649	1.98	639	
90	.74	3	181	61	134	45	2.01	67	
91	.90½	3	746	249	451	150	8.20	55	
91	.78	4	393	98	286	71	4.20	68	
185	2.00	3	305	102	410	137	1.82	310	
512	1.85	2	636	318	1,047	524	2.03	516	
286	4.12½	1	187	187	770	770	0.65	1,178	
512	3.25	2	401	201	910	455	1.28	710	
286	2.52	2	833	417	2,086	1,043	2.79	764	
512	1.83	2	440	220	584	292	1.41	423	
512	1.84½	12	1,417	118	2,811	218	4.92	577	
187	2.25	2	421	211	948	474	2.08	398	
202	1.85½	2	289	145	696	348	1.43	376	
123	1.20	1	129	129	410	410	6.97	422	
220	2.93½	7	121	17	2,696	385	8.98	673	
512	2.46½	2	708	354	1,767	884	2.27	781	
512	2.60	2	1,044	522	2,010	1,005	3.53	793	
512	1.70½	2	636	318	1,080	540	2.04	534	
512	2.10½	12	2,692	224	3,420	285	8.24	958	
512	2.57½	5	1,688	338	4,237	847	8.24	612	
168	1.78	1	87	87	153	153	0.52	298	
153	1.78½	9	681	76	1,125	125	4.07	278	
512	2.16	10	2,788	279	6,023	602	8.91	678	
512	.68	8	2,789	344	2,373	297	8.75	280	
92	.51	22	1,680	72	848	37	18.06	67	
512	.63½	6	1,606	268	1,272	212	6.26	47	
79	.66½	3	241	80	167	56	3.56	53	
40	.63½	9	635	71	239	27	11.14	59	
512	2.00	1	253	253	565	565	0.90	625	
512	2.11	2	313	157	690	345	1.00	680	
512	2.00	2	173	87	351	176	0.55	333	
512	2.10	3	803	268	637	212	0.97	653	
512	1.80	1	187	187	380	380	0.97	449	
512	1.92½	3	873	291	1,690	563	2.78	606	
77	.80½	4	261	65	310	78	2.80	97	
52	.73	1	56	56	43	43	1.13	38	
512	2.14½	2	419	210	807	449	1.34	670	
363	.84½	1	317	317	196	196	0.87	124	
119	2.00	2	143	72	672	336	0.91	620	
512	2.00	2	612	306	1,196	598	1.90	611	
350	1.43	4	1,048	262	1,487	373	2.18	486	
512	1.88	7	1,057	151	2,096	299	2.18	494	
512	1.82	3	255	85	288	123	0.81	476	
512	2.25	1	340	340	810	810	1.13	704	
365	1.12½	2	730	365	821	411	2.00	411	
512	1.00½	4	705	176	766	192	2.45	316	
156	1.25	2	370	185	234	117	1.74	192	
155	1.15	2	304	152	353	177	1.96	180	
512	2.40	1	313	313	720	720	1.40	720	
512	2.01	7	1,365	195	2,747	393	6.87	630	

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Man- u- fac- tural num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1919	43	Engineer, air compressor	Iron ore	United States
1920		Engineers, axle hammer	Mixed iron and steel	United States
1921		Engineers, blast	Mixed iron and steel	Great Britain
1922		Engineers, bloom	Mixed iron and steel	Great Britain
1923		do	Mixed iron and steel	Great Britain
1924		Engineers, blowing	Steel ingots	Continent of Europe
1925		do	Mixed iron and steel	Continent of Europe
1926	10	Engineers, chief	Pig iron	Northern district, U. S.
1927		do	Mixed iron and steel	United States
1928		do	Mixed iron and steel	United States
1929	6	Engineers, coal crusher	Coke	United States
1930		Engineers, condensing	Mixed iron and steel	Great Britain
1931		Engineers, crane	Mixed iron and steel	Continent of Europe
1932		do	Mixed iron and steel	Great Britain
1933		Engineers, crop-end	Mixed iron and steel	Great Britain
1934	109	Engineers, dinker	Pig iron	Southern district, U. S.
1935		Engineers, drill	Mixed iron and steel	Great Britain
1936		do	Mixed iron and steel	Great Britain
1937		Engineer, drop	Steel bloom	United States
1938	2	Engineers, fan	Steel ingots	United States
1939		do	Mixed iron and steel	Great Britain
1940		Engineers, flat plate	Mixed iron and steel	Great Britain
1941		Engineer, foundry	Mixed iron and steel	Great Britain
1942	42	Engineers, furnace	Pig iron	Northern district, U. S.
1943		do	Pig iron	Northern district, U. S.
1944	7	Engineers, grinding	Steel ingots	United States
1945		Engineers, hammer	Steel rails	Continent of Europe
1946	67	Engineers, hoisting	Pig iron	Northern district, U. S.
1947		do	Pig iron	Great Britain
1948	19	do	Bituminous coal	United States
1949	36	do	Bituminous coal	United States
1950		do	Bituminous coal	United States
1951		Engineers, hydraulic	Mixed iron and steel	Great Britain
1952		do	Mixed iron and steel	Great Britain
1953		Engineers, lathe	Mixed iron and steel	Great Britain
1954		do	Mixed iron and steel	Great Britain
1955	22	Engineers, locomotive	Pig iron	Northern district, U. S.
1956	42	do	Pig iron	Northern district, U. S.
1957	67	do	Pig iron	Northern district, U. S.
1958	101	do	Pig iron	Southern district, U. S.
1959	103	do	Pig iron	Southern district, U. S.
1960	8	do	Finished bar iron	United States
1961	1	do	Steel ingots	United States
1962	7	do	Steel ingots	United States
1963		do	Steel billets	United States
1964		do	Steel blooms	United States
1965		do	Steel blooms	United States
1966		do	Mixed iron and steel	United States
1967		do	Mixed iron and steel	United States
1968		do	Mixed iron and steel	Continent of Europe
1969	42	do	Iron ore	United States
1970		Engineers, machine shop	Mixed iron and steel	United States
1971		Engineer, mechanical	Mixed iron and steel	Continent of Europe
1972		Engineer, mechanical, assistant	Mixed iron and steel	Continent of Europe
1973		Engineers, press	Mixed iron and steel	Great Britain
1974		do	Mixed iron and steel	Great Britain
1975		Engineers, puddling	Mixed iron and steel	Great Britain
1976		Engineers, pump	Mixed iron and steel	Continent of Europe
1977		do	Mixed iron and steel	Great Britain
1978		Engineers, rail mill	Mixed iron and steel	Great Britain
1979		Engineers, rolls	Mixed iron and steel	United States
1980		do	Mixed iron and steel	Great Britain
1981		Engineers, saw	Mixed iron and steel	Great Britain
1982		do	Mixed iron and steel	Great Britain
1983		Engineer, shape hammer	Mixed iron and steel	United States
1984		Engineer, shear	Mixed iron and steel	Great Britain
1985		Engineer, shop	Mixed iron and steel	Great Britain
1986		Engineer, stamping	Mixed iron and steel	Continent of Europe

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless Non. Tables I to XI. Where no establishment number is given as statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
365	\$1.05	1	232	388	\$632	\$632	1.05	9002	1618
158	(a)	8	(a)	(a)	404	67	(a)	(a)	1090
58	.70	4	225	56	187	39	4.21	87	1821
48	.65	4	210	53	130	35	4.38	32	1622
43	.61	2	118	60	85	45	2.25	42	1623
76	.53½	3	276	92	284	84	3.53	74	1624
313	.60½	1	261	261	250	250	1.15	317	1625
365	2.79½	1	378	378	1,050	1,050	1.04	1,011	1626
158	4.00	1	196	196	649	649	6.98	657	1627
312	4.23	1	318	318	1,337	1,337	1.02	1,316	1628
92	1.67½	2	92	46	154	77	1.02	154	1629
53	.61	2	107	54	55	33	2.00	32	1630
313	.54½	1	118	118	64	64	0.38	170	1631
53	.39	3	113	38	45	15	2.17	21	1632
53	.21½	2	104	52	27	14	2.04	13	1633
365	1.61½	4	1,038	260	1,678	420	2.84	24	1634
48	.40	2	108	53	53	26	2.21	24	1635
53	.62½	4	133	33	70	18	2.52	28	1636
236	1.60	1	186	186	267	267	0.81	367	1637
132	1.79½	3	347	116	622	207	2.63	207	1638
53	.57	3	127	42	72	36	2.40	30	1639
48	.38½	2	119	60	42	21	2.46	17	1640
53	.39½	1	43	43	13	13	0.81	10	1641
365	1.95	2	714	357	1,321	321	1.06	676	1642
365	2.64½	2	685	343	1,530	375	1.58	980	1643
236	1.85	2	468	234	308	154	2.02	154	1644
77	1.85½	1	196	65	264	121	2.85	143	1645
365	2.00	1	340	340	671	671	0.92	720	1646
159	1.01½	1	178	178	178	178	1.20	187	1647
184	2.16	2	268	134	783	391	2.00	298	1648
313	1.72½	1	167	167	288	288	0.53	540	1649
313	2.25	1	253	253	654	654	0.81	685	1650
48	.63	2	114	57	72	36	2.28	36	1651
58	.61	3	125	41	77	26	2.22	33	1652
48	.57	1	31	31	18	18	0.85	28	1653
53	.63	1	69	69	44	44	1.20	34	1654
313	1.62	3	518	173	944	315	1.65	570	1655
366	1.85	2	718	359	1,328	328	1.97	676	1656
365	2.00	1	86	86	86	86	0.08	1,106	1657
164	2.13	2	367	183	1,149	363	1.90	576	1658
365	2.14½	2	368	184	790	395	1.91	784	1659
296	2.00	1	296	296	897	897	1.00	897	1660
313	2.15	7	249	36	535	76	0.80	873	1661
236	1.80½	3	494	165	765	255	1.78	436	1662
202	2.18	16	1,941	115	3,945	246	9.11	432	1663
182	1.70	2	365	183	536	212	2.46	236	1664
296	2.11	5	725	145	1,666	333	3.41	485	1665
313	2.02	4	840	210	2,451	613	2.69	912	1666
313	2.13½	2	811	406	681	341	1.00	686	1667
313	.61	4	1,200	300	733	183	3.83	181	1668
313	2.60	1	207	207	787	787	0.96	782	1669
313	1.76½	2	312	156	651	326	1.00	653	1670
318	2.80	1	313	313	1,029	1,029	1.00	1,029	1671
232	1.21	1	313	313	378	378	1.00	378	1672
48	.48½	1	65	65	27	27	1.15	24	1673
53	.45	2	107	54	48	24	2.02	24	1674
48	.63	2	126	63	79	40	2.63	30	1675
313	.57½	3	628	209	304	152	1.63	180	1676
53	.67	2	150	75	81	41	2.26	38	1677
53	.62½	4	230	58	191	48	4.15	44	1678
312	2.03½	6	1,802	300	2,673	646	6.08	627	1679
53	.49	7	391	56	27	27	7.38	25	1680
48	.51½	4	192	48	99	25	4.00	25	1681
53	.60	2	178	89	118	59	1.00	25	1682
168	2.00	1	163	163	502	502	0.97	517	1683
53	.65	1	87	87	37	37	1.08	34	1684
53	.66½	1	59	59	21	21	1.11	19	1685
313	.47½	1	268	268	128	128	0.86	149	1686

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment number refers to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar. year number.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1007	39	Engineers, stationary	Coke	United States
1008	39	do	Coke	United States
1009	42	do	Iron ore	United States
1010		Engineers, tipper	Mixed iron and steel	Great Britain
1011		Engineers, triangle	Mixed iron and steel	Great Britain
1012		Engineers, ventilator	Mixed iron and steel	Continent of Europe
1013		Engineer, winding	Mixed iron and steel	Continent of Europe
1014	101	Engineer and engineers' helper	Pig iron	Southern district, U. S.
1015	26	Engineers and firemen	Bituminous coal	United States
1016		do	Bituminous coal	United States
1017	58	Engineers and foremen	Pig iron	Northern district, U. S.
1018	8	Engineers and laborers	Pig iron	Northern district, U. S.
1019	32	do	Pig iron	Northern district, U. S.
1100	50	do	Pig iron	Northern district, U. S.
1101	1	do	Steel ingots	United States
1102		do	Mixed iron and steel	United States
1103		do	Mixed iron and steel	United States
1104	1	do	Iron ore	United States
1105	78	do	Iron ore	United States
1106	9	Engineers and machinists	Pig iron	Northern district, U. S.
1107		do	Steel blooms	United States
1108		do	Mixed iron and steel	United States
1109	44	do	Iron ore	United States
1110	41	Engineers and miners	Iron ore	United States
1111	43	do	Iron ore	United States
1112	1	Engineer and rigger	Steel ingots	United States
1113		Engineer and roller	Mixed iron and steel	United States
1114	162	Engineer and water tender	Pig iron	Southern district, U. S.
1115	95	Engineer and wiper	Pig iron	Southern district, U. S.
1116	101	Engineers helpers	Pig iron	Southern district, U. S.
1117	17	do	Cast bar iron	United States
1118	101	Engineers' helper and laborer	Pig iron	Southern district, U. S.
1119	101	Engineers' helper and teamster	Pig iron	Southern district, U. S.
1120		Enginemen	Mixed iron and steel	Great Britain
1121	148	Enginemen, fan	Bituminous coal	Dominion of Canada
1122	176	do	Bituminous coal	Great Britain
1123	148	Enginemen, hauling	Bituminous coal	Dominion of Canada
1124	170	do	Bituminous coal	Great Britain
1125	170	Enginemen, locomotive	Bituminous coal	Great Britain
1126	170	Enginemen, underground	Bituminous coal	Great Britain
1127	148	Enginemen, winding	Bituminous coal	Dominion of Canada
1128	170	Enginemen's helpers	Bituminous coal	Great Britain
1129		Entrymen	Bituminous coal	United States
1130		Entrymen and haulers	Bituminous coal	United States
1131		Entrymen and laborers	Bituminous coal	United States
1132		Entrymen and miners	Bituminous coal	United States
1133		Entrymen and timbermen	Bituminous coal	United States
1134		Entrymen and water boiler	Bituminous coal	United States
1135		Examiner	Mixed iron and steel	Continent of Europe
1136	148	Extra hand	Bituminous coal	Dominion of Canada
1137		Fagotmakers	Mixed iron and steel	United States
1138	101	Fallmen	Pig iron	Southern district, U. S.
1139	99	Farmen	Bituminous coal	United States
1140	109	do	Bituminous coal	United States
1141	109	Farmen and weighman	Bituminous coal	United States
1142	8	Feeders, coal crusher	Coke	United States
1143		Fettlers and slag wheelers	Mixed iron and steel	Great Britain
1144		File cleaner	Pig iron	Great Britain
1145		Flers	Steel rails	Continent of Europe
1146		do	Mixed iron and steel	Great Britain
1147		do	Mixed iron and steel	Great Britain
1148	9	Fillers	Pig iron	Northern district, U. S.
1149	10	do	Pig iron	Northern district, U. S.
1150	32	do	Pig iron	Northern district, U. S.
1151	41	do	Pig iron	Northern district, U. S.
1152	42	do	Pig iron	Northern district, U. S.
1153	49	do	Pig iron	Northern district, U. S.
1154	55	do	Pig iron	Northern district, U. S.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.					Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.
		Different employés.	Days of work done.		Earnings.		Necessary employés.	Consequent average earnings per em- ployé.	
			Total.	Average.	Total.	Average.			
313	\$1.81	2	277	139	\$502	\$251	0.89	\$567	1087
365	1.05	1	301	301	316	316	0.82	283	1088
313	1.43½	4	1,296	324	1,857	464	4.14	449	1089
48	.69	2	74	37	49	25	1.54	32	1090
53	.49	2	94	47	46	23	1.77	26	1091
313	.55½	2	714	357	395	198	2.28	173	1092
313	.35½	1	264	264	94	94	0.84	111	1093
184	1.79	1	109	109	195	195	0.59	329	1094
313	1.72	1	317	317	545	545	1.01	538	1095
365	1.90	1	346	346	657	657	0.95	693	1096
365	2.95	1	251	251	740	740	0.69	1,076	1097
365	2.25	1	362	362	814	814	0.99	821	1098
365	1.60	1	8	8	8	8	0.01	584	1099
365	1.84	1	179	179	329	329	0.49	671	1100
313	1.51½	4	116	29	176	44	0.37	475	1101
313	1.62½	1	122	122	198	198	0.39	508	1102
313	1.45½	1	11	11	16	16	0.04	455	1103
313	1.51½	1	76	76	115	115	0.24	474	1104
313	1.77	1	200	200	354	354	0.64	554	1105
365	3.97	1	321	321	953	953	0.88	1,084	1106
230	2.89	1	268	268	833	833	1.25	665	1107
313	1.78	2	363	182	646	323	1.16	557	1108
313	2.60	4	1,133	283	2,948	736	3.62	814	1109
313	1.22½	2	246	123	301	151	0.79	383	1110
313	1.45½	1	301	301	439	439	0.96	457	1111
313	1.91½	1	205	205	393	393	0.65	600	1112
155	2.00	1	2	2	4	4	0.01	310	1113
365	1.82	1	313	313	570	570	0.86	665	1114
334	1.14	1	303	303	345	345	0.91	390	1115
184	1.40	16	1,125	70	1,577	99	6.12	258	1116
286	1.75	3	77	26	126	45	0.27	505	1117
184	1.24	1	50	50	62	62	0.27	228	1118
184	1.12½	1	113	113	127	127	0.61	207	1119
156	1.01	6	850	142	858	143	5.45	157	1120
365	1.20	2	763	382	915	458	2.00	438	1121
91	1.21	2	153	77	185	93	1.60	110	1122
313	1.20	3	475	238	569	285	1.52	375	1123
91	1.44	2	182	91	262	131	2.00	131	1124
91	1.16½	2	163	82	199	95	1.80	106	1125
91	1.09	2	163	82	178	89	1.70	99	1126
313	1.25	1	330	330	412	412	1.05	391	1127
91	.43½	2	154	77	67	34	1.70	40	1128
313	(a)	88	(a)	(a)	4,525	51	(a)	(a)	1129
313	1.47	5	261	52	384	77	0.83	461	1130
313	(a)	6	(a)	(a)	839	138	(a)	(a)	1131
313	1.87½	3	162	54	304	101	0.52	567	1132
313	(a)	1	(a)	(a)	162	162	(a)	(a)	1133
313	.67½	1	62	62	42	42	0.20	212	1134
92	.42	1	92	92	39	39	1.00	39	1135
313	1.00	1	252	252	252	252	0.01	313	1136
313	2.03	2	65	33	132	66	0.21	636	1137
184	1.25	17	551	32	685	40	2.99	2.9	1138
313	1.50	3	310	103	470	157	0.99	475	1139
313	1.53½	1	173	173	263	263	0.55	476	1140
313	1.63	1	194	194	326	326	0.62	526	1141
92	1.00	2	43	22	43	22	0.47	92	1142
156	.90	2	320	160	258	144	2.05	140	1143
135	1.03	1	135	135	139	139	1.00	139	1144
78	.51	32	1,900	63	1,014	32	25.51	40	1145
48	(a)	6	(a)	(a)	273	39	(a)	(a)	1146
53	.61	8	407	51	247	31	7.68	32	1147
365	1.92	1	265	265	509	509	0.73	701	1148
365	1.58	94	7,219	77	11,398	121	19.78	576	1149
305	1.62½	29	4,274	147	6,953	240	11.70	594	1150
167	1.50	10	1,441	144	2,162	216	8.63	251	1151
365	1.50	2	236	118	343	172	0.65	530	1152
365	1.35	25	4,239	170	5,742	230	11.61	494	1153
181	1.41½	36	3,357	93	4,742	132	18.55	256	1154

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Man- ual num- ber.	Es- ta- blish- ment num- ber.	Occupation.	Industry.	Locality.
1155	97	Iron	Pig iron	Northern district, U. S.
1156	95	do	Pig iron	Southern district, U. S.
1157	103	do	Pig iron	Southern district, U. S.
1158	108	do	Pig iron	Southern district, U. S.
1159		do	Pig iron	Continent of Europe
1160	35	do	Pig iron	Great Britain
1161	87	do	Pig iron	Great Britain
1162		do	Mixed iron and steel	United States
1163		do	Mixed iron and steel	Continent of Europe
1164		do	Mixed iron and steel	Continent of Europe
1165	73	do	Iron ore	United States
1166	9	Fillers, bottom	Pig iron	Northern district, U. S.
1167	22	do	Pig iron	Northern district, U. S.
1168	11	do	Pig iron	Northern district, U. S.
1169	11	do	Pig iron	Northern district, U. S.
1170	84	do	Pig iron	Northern district, U. S.
1171	95	do	Pig iron	Southern district, U. S.
1172	109	do	Pig iron	Southern district, U. S.
1173	114	do	Pig iron	Southern district, U. S.
1174	38	Fillers, cinder	Pig iron	Great Britain
1175	87	do	Pig iron	Great Britain
1176	59	Fillers, coke	Pig iron	Northern district, U. S.
1177	83	do	Pig iron	Northern district, U. S.
1178	36	do	Pig iron	Great Britain
1179	87	do	Pig iron	Great Britain
1180		do	Pig iron	Great Britain
1181	1	Fillers, cupola	Steel ingots	United States
1182	58	Fillers, lime	Pig iron	Northern district, U. S.
1183		do	Pig iron	Great Britain
1184	36	Fillers, mine	Pig iron	Great Britain
1185	58	Fillers, ore	Pig iron	Northern district, U. S.
1186	83	do	Pig iron	Northern district, U. S.
1187		do	Pig iron	Great Britain
1188	95	Fillers, stockhouse	Pig iron	Southern district, U. S.
1189	87	Fillers, stove	Pig iron	Great Britain
1190	10	Fillers, top	Pig iron	Northern district, U. S.
1191	22	do	Pig iron	Northern district, U. S.
1192	33	do	Pig iron	Northern district, U. S.
1193	41	do	Pig iron	Northern district, U. S.
1194	43	do	Pig iron	Northern district, U. S.
1195	49	do	Pig iron	Northern district, U. S.
1196	35	do	Pig iron	Northern district, U. S.
1197	58	do	Pig iron	Northern district, U. S.
1198	83	do	Pig iron	Northern district, U. S.
1199	84	do	Pig iron	Northern district, U. S.
1200	95	do	Pig iron	Southern district, U. S.
1201	101	do	Pig iron	Southern district, U. S.
1202	109	do	Pig iron	Southern district, U. S.
1203	109	do	Pig iron	Southern district, U. S.
1204	114	do	Pig iron	Southern district, U. S.
1205		do	Pig iron	Continent of Europe
1206		do	Steel ingots	Continent of Europe
1207	9	Fillers and helpers	Pig iron	Northern district, U. S.
1208	103	do	Pig iron	Southern district, U. S.
1209	32	Filler and iron handler	Pig iron	Northern district, U. S.
1210	10	Filler and iron men	Pig iron	Northern district, U. S.
1211	49	Filler and keeper	Pig iron	Northern district, U. S.
1212	19	Fillers and keepers helpers	Pig iron	Northern district, U. S.
1213	95	do	Pig iron	Southern district, U. S.
1214	9	Fillers and laborers	Pig iron	Northern district, U. S.
1215	19	do	Pig iron	Northern district, U. S.
1216	32	do	Pig iron	Northern district, U. S.
1217	42	do	Pig iron	Northern district, U. S.
1218	58	do	Pig iron	Northern district, U. S.
1219	67	do	Pig iron	Northern district, U. S.
1220	84	do	Pig iron	Northern district, U. S.
1221	101	do	Pig iron	Southern district, U. S.
1222	103	do	Pig iron	Southern district, U. S.
1223		do	Mixed iron and steel	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XL. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Men- sural num- ber.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per em- ploye.
			Total.	Average.	Total.	Average.			
308	\$1.61	28	5,975	211	66,639	\$241	14.28	6589	1135
304	1.39	8	385	128	524	175	1.15	455	1139
305	1.18	119	6,947	58	8,222	69	19.02	432	1187
305	1.14	8	565	118	143	17	1.35	615	1159
91	.71	6	492	82	351	59	8.41	65	1200
91	1.04	4	228	85	253	68	2.72	95	1199
91	.89	8	666	63	689	74	7.22	80	1161
212	1.63	40	8,277	172	13,459	261	26.44	810	1123
92	.50	68	4,689	69	2,315	34	59.97	40	1183
212	.54	12	2,405	200	1,314	110	7.68	171	1184
212	1.88	28	1,369	50	2,832	105	4.48	680	1145
305	2.03	27	8,025	113	6,128	227	8.30	741	1166
305	1.50	21	6,256	291	9,368	300	17.08	545	1167
305	1.80	15	3,993	268	6,002	400	10.94	549	1168
181	1.70	10	2,378	149	4,018	232	13.14	307	1169
122	1.20	8	677	85	507	101	8.65	145	1179
224	1.23	1	3	3	4	4	0.01	443	1171
305	1.12	98	8,792	69	7,595	11	18.61	408	1172
305	1.06	21	2,663	127	2,820	134	7.30	307	1173
91	.79	4	321	80	253	63	3.53	71	1176
91	.71	6	595	74	424	53	8.64	65	1178
305	1.58	19	5,207	274	8,008	421	14.27	561	1179
92	1.23	6	842	87	412	69	3.72	111	1177
91	.62	6	459	77	287	48	5.04	57	1179
91	.59	19	1,403	79	653	45	18.39	54	1179
125	.88	4	540	135	478	119	4.00	119	1180
212	2.35	2	259	130	609	305	9.33	728	1181
305	1.65	11	8,241	307	5,236	478	9.26	868	1182
125	.78	4	540	135	475	119	4.00	119	1183
91	.87	12	833	78	815	68	10.25	79	1184
305	1.54	19	8,081	267	7,828	412	13.92	662	1185
92	1.48	4	210	79	449	112	3.43	131	1186
125	1.01	12	1,620	125	1,638	127	12.00	127	1187
231	1.16	185	6,768	33	7,880	40	30.26	389	1188
91	.54	2	179	28	86	44	1.93	50	1189
305	1.90	1	717	229	1,284	455	1.90	684	1190
305	1.61	12	1,305	109	1,975	165	2.57	632	1191
305	2.00	6	1,334	222	2,626	438	2.66	719	1192
107	1.68	2	825	168	853	277	2.01	376	1193
305	1.54	8	2,395	299	2,888	461	0.57	662	1194
305	1.66	9	673	237	1,058	529	1.84	674	1195
181	2.10	4	185	185	1,285	546	2.83	879	1196
305	1.91	11	2,244	301	6,390	581	9.18	697	1197
92	1.67	2	164	62	275	139	1.78	154	1198
122	1.45	2	235	118	240	170	1.77	177	1199
224	1.73	3	496	248	866	433	1.49	563	1200
184	1.75	6	906	151	1,659	276	4.02	316	1201
305	1.48	7	1,484	213	2,165	309	4.09	529	1202
305	1.25	6	1,214	125	1,516	168	3.23	456	1203
305	1.50	4	1,014	254	1,531	380	2.78	546	1204
91	.73	7	509	73	372	63	8.56	87	1205
77	.71	4	233	58	164	42	3.01	55	1206
305	2.14	1	7	7	15	15	0.01	782	1207
305	1.25	1	56	56	70	70	0.18	456	1208
305	2.34	1	68	68	139	180	0.19	551	1209
305	1.64	3	253	118	879	193	0.97	599	1210
305	1.69	1	254	254	599	599	0.97	618	1211
305	1.59	1	114	114	181	181	0.81	1212	1212
324	1.23	1	3	3	4	4	0.01	443	1213
305	1.62	21	2,320	158	6,044	286	9.09	684	1214
305	1.52	8	402	50	612	77	1.10	636	1215
305	1.55	4	301	78	471	119	0.83	596	1216
305	1.28	13	2,456	189	2,402	261	6.73	506	1217
305	1.64	6	1,449	240	2,383	477	3.97	600	1218
305	1.46	12	2,391	199	3,467	267	6.53	529	1219
122	1.04	11	604	63	902	60	4.96	134	1220
184	1.19	6	236	39	260	43	1.24	203	1221
305	1.68	6	80	14	87	17	0.72	287	1222
212	1.64	2	389	196	886	389	1.28	686	1223

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production process for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1234		Filler and masons' helper.	Mixed iron and steel.	United States.
1235	9	Filler and metal breaker.	Pig iron.	Northern district, U. S.
1236	63	Filler and metal breaker.	Pig iron.	Northern district, U. S.
1237	5	Fillers and ore breakers.	Pig iron.	Northern district, U. S.
1238	21	do.	Pig iron.	Northern district, U. S.
1239	11	Filler and scraper.	Pig iron.	Northern district, U. S.
1240	163	Filler and stocker.	Pig iron.	Southern district, U. S.
1241	109	Filler and sweeper.	Pig iron.	Southern district, U. S.
1242	10	Fillers helpers.	Pig iron.	Northern district, U. S.
1243	101	do.	Pig iron.	Southern district, U. S.
1244	10	Fillers helper and laborer.	Pig iron.	Northern district, U. S.
1245	10	Fillers' helper and stock preparer.	Pig iron.	Northern district, U. S.
1246		Finishers.	Mixed iron and steel.	United States.
1247		do.	Mixed iron and steel.	Continent of Europe.
1248		do.	Mixed iron and steel.	Continent of Europe.
1249		do.	Mixed iron and steel.	Continent of Europe.
1250		Finishers' helper.	Mixed iron and steel.	Continent of Europe.
1251	96	Fire bosses.	Bituminous coal.	United States.
1252	197	do.	Bituminous coal.	United States.
1253	10	Firemen.	Pig iron.	Northern district, U. S.
1254	22	do.	Pig iron.	Northern district, U. S.
1255	46	do.	Pig iron.	Northern district, U. S.
1256	54	do.	Pig iron.	Northern district, U. S.
1257	72	do.	Pig iron.	Northern district, U. S.
1258	95	do.	Pig iron.	Southern district, U. S.
1259	101	do.	Pig iron.	Southern district, U. S.
1260	109	do.	Pig iron.	Southern district, U. S.
1261	37	do.	Pig iron.	Great Britain.
1262	9	do.	Muck bar iron.	United States.
1263	17	do.	Muck bar iron.	United States.
1264	26	do.	Muck bar iron.	United States.
1265	6	do.	Finished bar iron.	United States.
1266	9	do.	Finished bar iron.	United States.
1267	1	do.	Steel ingots.	United States.
1268		do.	Steel billets.	United States.
1269		do.	Steel blooms.	United States.
1270		do.	Steel blooms.	United States.
1271		do.	Mixed iron and steel.	United States.
1272		do.	Mixed iron and steel.	United States.
1273		do.	Mixed iron and steel.	United States.
1274		do.	Mixed iron and steel.	United States.
1275		do.	Mixed iron and steel.	Continent of Europe.
1276		do.	Mixed iron and steel.	Continent of Europe.
1277	10	do.	Bituminous coal.	United States.
1278		do.	Bituminous coal.	United States.
1279		do.	Bituminous coal.	United States.
1280	146	do.	Bituminous coal.	Dominion of Canada.
1281	150	do.	Bituminous coal.	Continent of Europe.
1282		do.	Bituminous coal.	Continent of Europe.
1283		do.	Bituminous coal.	Great Britain.
1284	170	do.	Bituminous coal.	Continent of Europe.
1285		do.	Coke.	Continent of Europe.
1286	1	do.	Iron ore.	United States.
1287	12	do.	Iron ore.	United States.
1288	42	do.	Iron ore.	United States.
1289	65	do.	Iron ore.	United States.
1290	66	do.	Iron ore.	United States.
1291	89	do.	Iron ore.	United States.
1292	71	do.	Iron ore.	United States.
1293	80	do.	Iron ore.	Continent of Europe.
1294		Firemen, axle hammer.	Mixed iron and steel.	United States.
1295		Firemen, boiler.	Mixed iron and steel.	United States.
1296		do.	Mixed iron and steel.	United States.
1297		do.	Mixed iron and steel.	Continent of Europe.
1298		do.	Mixed iron and steel.	Great Britain.
1299		do.	Mixed iron and steel.	Great Britain.
1300		Firemen, furnace.	Mixed iron and steel.	United States.
1301		do.	Mixed iron and steel.	Great Britain.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless Tables I to XL. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.	
		Different employés.	Days of work done.		Earnings.		Necessary employés.		Consequent average earnings per em- ployé.
			Total.	Average.	Total.	Average.			
313	\$1.46	1	28	28	941	941	0.00	948	1234
385	2.13	1	236	236	482	482	0.02	778	1235
181	1.05	1	147	147	213	213	0.81	290	1236
385	1.83	5	772	154	1,416	283	2.11	609	1237
385	1.55	1	111	111	171	171	0.30	568	1238
181	1.55	1	47	47	72	72	0.28	281	1239
385	1.11	1	89	89	77	77	0.10	407	1240
385	.87	1	133	132	215	115	0.20	318	1241
385	1.73	3	273	91	475	158	0.75	637	1242
184	1.50	5	707	141	1,040	173	2.84	271	1243
385	1.60	1	314	314	509	509	0.06	584	1244
283	1.04	1	80	80	131	131	0.22	588	1245
287	2.06	2	412	206	1,597	798	1.42	1,050	1246
313	.43	5	1,428	285	617	123	4.56	135	1247
92	.48	30	2,300	76	1,128	37	25.10	45	1248
313	.58	53	14,913	281	8,709	164	47.64	183	1249
313	.26	1	181	181	48	48	0.58	83	1250
313	2.06	1	220	220	671	671	1.02	884	1251
313	2.00	1	293	293	584	584	0.81	629	1252
305	2.00	2	619	310	1,207	604	1.70	712	1253
313	2.25	1	324	324	718	718	0.89	809	1254
384	1.86	3	705	235	963	321	1.62	488	1255
385	1.63	8	2,215	277	4,049	506	6.07	687	1256
92	1.64	1	92	92	150	150	1.00	160	1257
384	1.50	4	880	220	1,020	255	2.04	801	1258
184	1.63	11	1,150	105	1,764	160	6.25	232	1259
305	1.13	5	133	26	139	27	0.24	412	1260
91	.69	6	391	65	228	38	4.20	53	1261
313	1.47	6	864	144	1,272	212	2.76	461	1262
298	1.32	3	311	104	411	137	1.09	378	1263
313	1.50	3	414	138	621	207	1.32	470	1264
299	1.50	1	304	304	455	455	1.02	448	1265
313	1.07	3	354	121	283	94	1.17	323	1266
313	2.03	13	508	39	1,041	87	1.02	641	1267
202	2.06	9	993	110	1,920	213	4.62	416	1268
132	1.83	1	114	114	210	210	0.80	243	1269
230	1.63	27	1,294	48	2,876	88	5.63	432	1270
313	1.34	4	1,391	348	1,928	482	4.41	437	1271
313	1.60	14	1,971	141	2,163	226	6.30	502	1272
313	1.69	2	654	327	1,340	620	2.09	693	1273
198	1.72	6	439	73	743	124	2.58	288	1274
313	1.60	7	1,081	154	2,064	426	5.28	506	1275
77	.79	2	143	71	114	57	1.58	61	1276
92	.56	12	724	60	404	34	7.87	51	1277
184	1.50	1	171	171	250	250	0.82	278	1278
313	1.75	1	263	263	444	444	0.84	828	1279
303	1.78	2	428	214	763	383	1.17	652	1280
217	1.06	6	1,161	193	1,164	194	2.50	334	1281
77	.68	9	372	41	168	18	3.54	45	1282
52	.70	2	104	52	72	36	2.00	87	1283
91	.64	5	618	123	682	136	6.78	80	1284
305	.50	1	377	377	187	187	1.02	181	1285
313	1.25	1	88	88	48	48	0.12	896	1286
313	1.78	8	867	108	1,533	191	2.87	642	1287
313	1.60	3	1,602	534	2,501	833	2.12	489	1288
313	1.70	3	671	224	1,145	382	2.15	534	1289
313	1.53	4	1,103	276	1,712	429	3.54	465	1290
313	1.60	2	533	266	1,331	416	1.48	490	1291
313	1.80	11	1,810	166	3,267	297	5.80	563	1292
168	.52	2	318	159	171	85	2.01	85	1293
168	(a)	8	(a)	(a)	503	63	(a)	(a)	1294
313	1.83	30	2,848	95	5,222	174	8.10	575	1295
168	1.50	6	847	141	1,040	173	3.26	319	1296
313	.45	27	6,160	228	2,891	111	19.63	132	1297
48	.58	22	1,014	46	580	27	21.13	146	1298
170	.27	1	316	316	223	223	2.22	146	1299
313	4.71	1	291	291	1,371	1,371	0.03	1,475	1300
156	.62	2	300	150	290	145	1.02	154	1301

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the best of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1299		Fireman, gashouse	Mixed iron and steel	United States
1300		Fireman, link welders	Mixed iron and steel	United States
1301	23	Fireman, locomotive	Pig iron	Northern district, U. S.
1302	43	do	Pig iron	Northern district, U. S.
1303		do	Mixed iron and steel	United States
1304		do	Mixed iron and steel	Great Britain
1305	43	do	Iron ore	United States
1306		Fireman, shape hammer	Mixed iron and steel	United States
1307		Fireman and fireman's helper	Steel blooms	United States
1308		Fireman and foreman	Mixed iron and steel	United States
1309		Fireman and boiler up	Mixed iron and steel	United States
1310	23	Fireman and laborers	Pig iron	Northern district, U. S.
1311	1	do	Steel ingots	United States
1312		do	Steel blooms	United States
1313		do	Mixed iron and steel	United States
1314		do	Mixed iron and steel	United States
1315		do	Mixed iron and steel	United States
1316		do	Mixed iron and steel	United States
1317	73	Fireman and tender	Iron ore	United States
1318		Firemen and miners	Bituminous coal	United States
1319	41	do	Iron ore	United States
1320	43	do	Iron ore	United States
1321	60	Fireman and pumpman	Iron ore	United States
1322		Fireman and shearman	Mixed iron and steel	United States
1323	1	Firemen and stockers	Steel ingots	United States
1324		do	Mixed iron and steel	United States
1325	1	Fireman and vesselman	Steel ingots	United States
1326	26	Fireman and watchman	Bituminous coal	United States
1327		Firemen and water tenders	Mixed iron and steel	United States
1328	23	Firemen's helpers	Pig iron	Northern district, U. S.
1329		do	Steel blooms	United States
1330	26	Filters	Pig iron	Great Britain
1331	27	do	Pig iron	Great Britain
1332		do	Mixed iron and steel	Great Britain
1333		do	Mixed iron and steel	Great Britain
1334		do	Mixed iron and steel	Great Britain
1335	26	Filters' helpers	Pig iron	Great Britain
1336		do	Mixed iron and steel	Great Britain
1337	17	Pig grinders	Muck bar iron	United States
1338	58	Flagman	Pig iron	Northern district, U. S.
1339	58	Flagman and storekeeper	Pig iron	Northern district, U. S.
1340		Flue cleaner	Mixed iron and steel	Great Britain
1341	8	Foremen	Pig iron	Northern district, U. S.
1342	23	do	Pig iron	Northern district, U. S.
1343	23	do	Pig iron	Northern district, U. S.
1344	41	do	Pig iron	Northern district, U. S.
1345	43	do	Pig iron	Northern district, U. S.
1346	48	do	Pig iron	Northern district, U. S.
1347	85	do	Pig iron	Northern district, U. S.
1348	85	do	Pig iron	Northern district, U. S.
1349	67	do	Pig iron	Northern district, U. S.
1350	93	do	Pig iron	Southern district, U. S.
1351	101	do	Pig iron	Southern district, U. S.
1352	103	do	Pig iron	Southern district, U. S.
1353	100	do	Pig iron	Southern district, U. S.
1354		do	Pig iron	Southern district, U. S.
1355		do	Pig iron	Continent of Europe
1356	114	do	Pig iron	Continent of Europe
1357	26	do	Pig iron	Great Britain
1358	27	do	Pig iron	Great Britain
1359	7	do	Muck bar iron	United States
1360	1	do	Steel ingots	United States
1361	8	do	Steel ingots	United States
1362	7	do	Steel ingots	United States
1363		do	Steel ingots	Continent of Europe
1364		do	Mixed iron and steel	United States
1365		do	Mixed iron and steel	United States
1366		do	Mixed iron and steel	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless the Tables I to XL. Where no establishment number is given, no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Man-ual num-ber.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
312	\$1.25	45	8,327	141	\$9,545	\$190	20.21	9428	7282
168	(a)	5	(a)	(a)	1,534	307	(a)	(a)	1283
313	1.60	8	620	161	634	167	1.66	503	1284
365	1.50	2	700	350	1,030	515	1.62	548	1285
313	1.62	4	568	142	867	217	1.63	477	1286
156	.80	9	865	168	504	168	3.62	139	1287
313	1.50	1	238	238	447	447	0.85	470	1288
168	1.00	1	152	152	284	284	0.90	325	1289
230	1.64	1	117	117	191	191	0.51	377	1290
313	1.91	1	293	293	568	568	0.94	407	1291
313	1.59	1	47	47	75	75	0.15	499	1292
365	1.64	1	114	114	100	100	0.31	511	1293
313	1.60	1	2	2	8	8	0.01	470	1294
230	1.73	11	677	63	1,163	106	2.84	385	1295
313	1.24	1	220	220	274	274	0.70	380	1296
313	1.62	0	650	143	1,290	215	2.71	475	1297
168	1.67	1	7	7	11	11	0.04	1208	1298
313	1.51	1	29	29	44	44	0.09	475	1299
313	1.87	1	156	156	262	262	0.60	506	1300
365	(a)	1	(a)	(a)	148	148	(a)	(a)	1301
313	1.35	1	232	232	318	318	0.74	422	1302
313	1.44	3	702	234	1,016	339	2.24	453	1303
318	1.39	1	158	158	220	220	0.50	496	1304
168	1.43	1	110	110	187	187	0.85	346	1305
313	1.04	1	50	50	87	87	0.16	667	1306
168	1.23	1	28	28	35	35	0.17	710	1307
313	1.78	1	18	18	33	33	0.06	636	1308
313	1.43	1	301	301	408	408	0.96	445	1309
313	1.76	2	655	328	1,153	578	2.00	532	1310
365	1.62	2	330	270	822	411	1.47	557	1311
230	1.53	4	154	39	236	60	0.67	355	1312
79	.60	2	170	85	117	59	2.18	54	1313
78	.71	4	400	102	286	73	6.21	65	1314
48	.71	7	379	54	270	39	7.80	34	1315
156	1.38	4	803	201	1,083	271	8.14	211	1316
63	.70	30	1,005	35	767	26	20.66	87	1317
78	.80	1	78	78	28	28	1.00	28	1318
48	.36	1	46	46	17	17	0.96	18	1319
286	1.27	6	435	64	596	75	1.51	384	1320
365	1.35	1	219	219	339	339	0.60	465	1321
365	1.44	1	317	317	468	468	0.87	537	1322
48	.61	1	60	60	87	87	1.23	30	1323
365	2.76	3	761	254	2,166	702	2.00	1,010	1324
365	2.41	1	384	384	841	841	1.00	883	1325
365	2.65	1	360	360	954	954	0.00	967	1326
187	2.25	1	149	149	379	379	1.01	375	1327
366	2.09	2	671	336	1,407	704	1.84	765	1328
365	2.85	2	724	362	1,646	823	1.98	821	1329
181	2.74	2	365	183	1,001	501	2.02	1001	1330
347	2.67	3	2,062	258	6,127	769	6.94	1,031	1331
356	2.44	3	709	236	1,753	577	1.99	870	1332
324	2.33	3	539	177	1,215	412	1.58	778	1333
184	1.03	1	300	300	666	222	1.98	350	1334
366	3.93	2	622	311	2,447	1,224	1.70	1,436	1335
365	2.30	2	478	140	1,104	368	1.31	841	1336
363	2.44	2	730	365	1,814	907	2.05	907	1337
90	1.07	1	90	90	90	90	1.00	90	1338
91	1.15	3	261	87	360	120	2.67	105	1339
91	1.35	2	182	91	247	124	2.00	124	1340
91	1.73	3	273	91	473	157	3.00	157	1341
143	2.90	1	157	157	450	450	1.10	410	1342
365	4.44	1	105	105	496	496	0.29	1,020	1343
132	4.00	1	172	172	521	521	1.00	524	1344
251	4.81	3	568	189	2,732	911	2.98	1,208	1345
31	7.55	2	62	31	87	43	2.00	43	1346
318	8.00	1	4	4	13	13	0.01	638	1347
318	2.68	4	1,260	313	3,557	870	4.03	834	1348
313	2.40	3	450	225	1,533	768	1.44	1,068	1349

* Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the data for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by name of

Man- gins of man- hour.	Es- ta- blish- ment num- ber.	Occupation.	Industry.	Locality.
1280		Foremen—concluded	Mixed iron and steel.	Continent of Europe.
1281		do	Mixed iron and steel.	Continent of Europe.
1282		do	Mixed iron and steel.	Continent of Europe.
1283		do	Mixed iron and steel.	Great Britain.
1284	180	do	Bituminous coal.	United States.
1285		do	Bituminous coal.	United States.
1286	180	do	Bituminous coal.	Continent of Europe.
1287	6	do	Coke.	United States.
1288	12	do	Coke.	United States.
1289	19	do	Coke.	United States.
1290	22	do	Coke.	United States.
1291	20	do	Coke.	United States.
1292	22	do	Coke.	United States.
1293	42	do	Iron ore.	United States.
1294	42	do	Iron ore.	United States.
1295	66	do	Iron ore.	United States.
1296	60	do	Iron ore.	United States.
1297	61	do	Iron ore.	United States.
1298	77	do	Iron ore.	Continent of Europe.
1299	80	do	Iron ore.	Continent of Europe.
1300		Foremen, assistant.	Mixed iron and steel.	Great Britain.
1301	12	do	Coke.	United States.
1302	19	do	Coke.	United States.
1303	22	do	Coke.	United States.
1304	22	do	Coke.	United States.
1305	42	Foremen, blacksmiths.	Mixed iron and steel.	United States.
1306		do	Mixed iron and steel.	United States.
1307		do	Mixed iron and steel.	Great Britain.
1308		do	Mixed iron and steel.	Great Britain.
1309		Foremen, boiler.	Mixed iron and steel.	United States.
1310		Foremen, bottom builders.	Mixed iron and steel.	Continent of Europe.
1311		Foreman, bricklayers.	Mixed iron and steel.	United States.
1312	20	Foreman, bundlers and stock takers.	Finished bar iron.	Great Britain.
1313		Foremen, carpenters.	Mixed iron and steel.	Continent of Europe.
1314	42	do	Iron ore.	United States.
1315	72	do	Iron ore.	United States.
1316		Foreman, chippers.	Steel billets.	United States.
1317		Foremen, coke wren.	Mixed iron and steel.	United States.
1318	1	Foremen, converter.	Steel ingots.	United States.
1319		do	Mixed iron and steel.	Continent of Europe.
1320		Foremen, drillers.	Mixed iron and steel.	Great Britain.
1321		do	Mixed iron and steel.	Great Britain.
1322		Foremen, drop.	Steel blooms.	United States.
1323		Foreman, drop, assistant.	Steel blooms.	United States.
1324	26	Foreman, engine.	Pig iron.	Great Britain.
1325		Foremen, engineers.	Mixed iron and steel.	Great Britain.
1326		do	Iron ore.	United States.
1327	12	Foreman, fillers.	Mixed iron and steel.	Continent of Europe.
1328	27	Foremen, fitters.	Pig iron.	Great Britain.
1329		do	Mixed iron and steel.	Great Britain.
1330		do	Mixed iron and steel.	Great Britain.
1331		Foremen, gasboilers.	Mixed iron and steel.	United States.
1332		do	Mixed iron and steel.	United States.
1333		do	Mixed iron and steel.	Great Britain.
1334		Foremen, haulers.	Mixed iron and steel.	Great Britain.
1335		do	Mixed iron and steel.	Great Britain.
1336		do	Bituminous coal.	United States.
1337		Foremen, heaters.	Steel rails.	Continent of Europe.
1338	23	Foremen, iron bundlers.	Pig iron.	Northern district, U. S.
1339	1	do	Steel ingots.	United States.
1340	10	Foremen, laborers.	Pig iron.	Northern district, U. S.
1341	35	do	Pig iron.	Northern district, U. S.
1342		do	Pig iron.	Great Britain.
1343	1	do	Steel ingots.	United States.
1344		do	Steel ingots.	Continent of Europe.
1345		do	Steel ingots.	United States.
1346		do	Steel blooms.	United States.
1347		do	Steel blooms.	United States.
1348		do	Steel blooms.	United States.
1349		do	Steel rails.	Continent of Europe.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless the establishment number is given. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mag- in- al num- ber.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per em- ploye.
			Total.	Average.	Total.	Average.			
77	\$1.12	7	411	59	\$426	650	5.11	991	1309
313	2.39	1	313	313	750	750	1.00	750	1302
82	.88	4	378	95	348	87	2.09	82	1303
313	1.46	1	45	45	78	78	6.91	77	1304
313	3.10	1	313	313	970	970	1.00	970	1304
313	3.10	1	313	313	970	970	1.00	970	1305
77	1.02	1	88	88	54	54	1.14	47	1306
92	2.95	2	85	46	588	142	1.00	374	1307
313	2.28	1	313	313	1,020	1,020	1.00	1,020	1308
313	2.49	1	313	313	780	780	1.00	780	1309
313	2.14	1	314	314	673	673	1.00	671	1310
313	2.80	1	313	313	1,200	1,200	1.00	1,200	1311
305	2.00	1	304	304	728	728	1.00	730	1312
313	1.85	10	2,821	282	5,233	623	6.01	541	1313
313	2.30	1	313	313	720	720	1.00	720	1314
313	1.50	2	306	153	459	230	6.88	470	1315
313	1.40	2	444	148	634	208	1.43	440	1316
105	1.50	1	154	154	231	231	0.99	233	1317
313	.84	1	117	117	96	96	0.87	203	1318
155	.95	2	300	150	206	143	1.56	151	1319
58	.61	1	48	48	59	59	0.91	131	1320
313	2.33	1	301	301	699	699	0.96	727	1321
313	2.25	1	301	152	684	342	0.97	704	1322
313	1.50	1	246	246	369	369	0.70	470	1323
313	1.50	1	313	313	343	343	0.70	488	1324
313	2.45	1	302	302	1,043	1,043	0.96	1,080	1325
168	5.09	1	168	168	840	840	1.00	840	1326
46	1.34	1	48	48	64	64	1.00	64	1327
43	1.17	1	48	48	56	56	0.91	63	1328
313	2.00	2	448	224	802	445	1.43	623	1329
313	.74	2	435	218	121	61	1.56	223	1330
313	4.31	1	313	313	1,350	1,350	1.00	1,350	1331
99	1.04	1	99	99	138	138	1.00	133	1332
313	.87	1	374	374	328	328	1.19	278	1333
313	2.75	1	287	287	720	720	0.92	860	1334
313	2.50	1	311	311	777	777	0.90	7-8	1335
209	3.49	1	187	187	727	727	0.28	745	1336
313	2.75	1	300	300	797	797	0.23	840	1337
305	4.72	2	723	362	3,461	1,731	2.01	1,726	1338
313	.53	1	305	305	142	142	0.53	167	1339
48	2.43	1	48	48	117	117	1.00	117	1340
53	1.00	1	48	48	53	53	0.91	59	1341
230	1.00	2	181	90	140	170	0.83	140	1342
230	1.00	1	180	180	294	294	0.78	343	1343
91	1.21	1	91	91	111	111	1.00	111	1344
58	2.54	1	48	48	116	116	0.91	150	1345
313	2.40	1	313	313	780	780	1.00	7-6	1346
313	.50	1	175	175	99	99	0.56	177	1347
78	2.42	1	78	78	190	190	1.00	190	1348
46	1.22	1	80	80	110	110	1.25	88	1349
53	1.21	1	48	48	58	58	0.91	64	1350
305	2.00	2	404	202	908	404	1.33	730	1351
303	2.50	2	700	350	1,772	847	1.04	913	1352
53	.85	1	120	60	100	100	2.43	43	1353
48	1.00	1	48	48	57	57	1.00	53	1354
53	.91	1	49	49	39	39	0.91	43	1355
313	2.25	1	233	233	522	522	0.76	603	1356
78	1.74	2	158	79	275	138	2.01	128	1357
305	2.50	1	304	304	910	910	1.00	913	1358
313	1.91	1	456	456	674	674	1.43	608	1359
305	2.35	1	800	800	2,040	2,040	2.30	500	1360
181	2.00	1	1-0	1-0	257	257	0.60	250	1361
183	1.13	1	370	370	307	307	2.00	154	1362
305	2.19	1	117	117	263	263	0.33	1,132	1363
78	.73	1	130	130	91	91	1.67	57	1364
202	1.81	1	182	182	683	683	0.90	745	1365
144	1.83	1	146	146	240	240	1.91	243	1366
251	2.65	1	308	308	313	313	1.22	343	1367
78	.50	2	114	57	88	84	1.46	47	1368

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the end of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1429		Foremen, laborers—concluded	Mixed iron and steel	United States
1430		do	Mixed iron and steel	United States
1431		do	Mixed iron and steel	United States
1432		do	Mixed iron and steel	Continent of Europe
1433		do	Mixed iron and steel	Continent of Europe
1434		do	Mixed iron and steel	Continent of Europe
1435		do	Mixed iron and steel	Continent of Europe
1436		do	Mixed iron and steel	Continent of Europe
1437	19	do	Mixed iron and steel	Great Britain
1438		do	Bituminous coal	United States
1439		do	Bituminous coal	United States
1440		Foreman, laborers, assistants	Steel blooms	United States
1441	10	Foreman, locksmiths	Mixed iron and steel	Continent of Europe
1442		Foreman, machinery	Pig iron	Northern district U. S.
1443		Foreman, machinists	Pig iron	Continent of Europe
1444		do	Mixed iron and steel	United States
1445		do	Mixed iron and steel	United States
1446		do	Mixed iron and steel	Continent of Europe
1447	57	Foremen, masons	Pig iron	Great Britain
1448		do	Mixed iron and steel	Continent of Europe
1449		do	Mixed iron and steel	Continent of Europe
1450		do	Mixed iron and steel	Great Britain
1451		do	Mixed iron and steel	Great Britain
1452	39	Foremen, mill	Finished bar iron	Great Britain
1453		do	Steel billets	United States
1454		do	Steel rails	Continent of Europe
1455		do	Mixed iron and steel	United States
1456		do	Mixed iron and steel	Continent of Europe
1457		do	Mixed iron and steel	Great Britain
1458		do	Mixed iron and steel	Great Britain
1459	43	Foremen, miners	Iron ore	United States
1460		do	Iron ore	United States
1461	48	Foreman, miners	Steel ingots	United States
1462		Foreman, moulders	Mixed iron and steel	Great Britain
1463	56	Foreman, navvies	Pig iron	Great Britain
1464		Foreman, p. tmen	Steel ingots	United States
1465	2	Foremen, plate cutters	Mixed iron and steel	Continent of Europe
1466	20	Foremen, puddlers	Mixed iron and steel	Great Britain
1467		do	Mixed iron and steel	United States
1468		do	Mixed iron and steel	Continent of Europe
1469		do	Mixed iron and steel	Continent of Europe
1470		do	Mixed iron and steel	Continent of Europe
1471		do	Mixed iron and steel	Great Britain
1472	26	Foremen, rail bank	Mixed iron and steel	Great Britain
1473		do	Mixed iron and steel	Great Britain
1474		Foremen, repairers	Mixed iron and steel	Continent of Europe
1475		do	Mixed iron and steel	Continent of Europe
1476	20	Foremen, roll turners	Finished bar iron	Great Britain
1477		do	Mixed iron and steel	Great Britain
1478		do	Mixed iron and steel	Great Britain
1479		Foremen, rollers	Steel rails	Continent of Europe
1480		do	Steel rails	Continent of Europe
1481		do	Mixed iron and steel	Continent of Europe
1482		Foreman, scrap pileers	Mixed iron and steel	United States
1483		Foreman, scull breakers	Steel blooms	United States
1484		Foreman, shear room	Mixed iron and steel	United States
1485	1	Foreman, stockers	Steel ingots	United States
1486		Foremen, stokers	Mixed iron and steel	Great Britain
1487	163	Foremen, track	Pig iron	Southern district U. S.
1488		do	Steel blooms	United States
1489	69	do	Iron ore	United States
1490		Foremen, transportation	Mixed iron and steel	Continent of Europe
1491		do	Mixed iron and steel	Continent of Europe
1492		Foremen, warehouse	Mixed iron and steel	Continent of Europe
1493		Foreman, works	Mixed iron and steel	Continent of Europe
1494		Foreman, works, assistant	Mixed iron and steel	Continent of Europe
1495		Foreman, yard	Mixed iron and steel	United States
1496		Foreman and braker	Mixed iron and steel	United States
1497	23	Foreman and laborer	Pig iron	Northern district, U. S.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

*one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XL Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.	
		Different employee.	Days of work done.		Earnings.		Necessary employee.		Consequent average earnings per em- ploye.
			Total.	Average.	Total.	Average.			
313	\$2.75	3	632	317	\$1,740	\$570	2.83	\$560	1429
313	2.25	1	318	318	716	716	1.02	705	1430
313	1.58	8	487	169	789	236	1.56	494	1431
77	.77	1	72	72	56	56	0.94	■	1432
313	.06	1	343	343	329	329	1.10	300	1433
92	.63	5	443	89	274	55	4.82	57	1434
313	.71	2	800	350	490	249	2.23	223	1435
53	.50	1	76	76	70	70	1.43	49	1436
150	1.75	1	171	171	299	299	1.08	276	1437
313	1.49	0	968	164	1,490	245	3.15	486	1438
251	1.55	1	146	146	228	228	0.98	392	1439
313	.80	1	229	229	263	263	1.05	250	1440
365	4.66	1	365	365	1,700	1,700	1.00	1,700	1441
91	1.85	1	106	106	143	143	1.16	123	1442
160	3.50	1	177	177	818	818	1.05	587	1443
153	2.87	1	155	155	450	450	1.00	450	1444
313	.76	1	302	302	231	231	0.94	230	1445
79	1.31	1	78	78	96	96	1.00	95	1446
313	2.21	1	313	313	692	692	1.40	662	1447
313	.67	1	161	161	94	94	0.45	■	1448
46	1.09	1	48	48	53	53	1.00	52	1449
52	1.62	1	48	48	83	83	0.91	97	1450
80	1.48	1	99	99	145	145	1.00	145	1451
202	5.22	2	302	190	2,048	1,024	1.94	1,055	1452
78	8.22	1	74	74	237	237	0.95	250	1453
313	7.08	2	626	313	4,420	2,210	2.06	2,210	1454
32	1.80	2	184	92	348	174	■	174	1455
46	1.21	1	48	48	58	58	1.00	58	1456
53	(a)	8	(a)	(a)	282	94	(a)	(a)	1457
313	1.83	8	911	304	1,670	657	2.91	574	1458
313	2.12	8	1,154	331	2,455	491	■	606	1459
313	2.65	1	257	257	681	681	0.82	829	1460
63	1.63	1	48	48	78	78	0.91	86	1461
91	.90	1	91	91	90	90	1.00	90	1462
133	4.49	2	202	101	907	454	1.53	803	1463
313	.80	4	1,309	327	1,055	264	4.18	252	1464
99	1.21	4	306	90	482	121	4.00	121	1465
290	4.00	1	266	266	1,170	1,170	1.00	1,170	1466
77	.97	4	287	72	279	70	1.72	75	1467
313	1.53	2	638	319	968	484	2.09	494	1468
92	1.65	2	184	92	304	152	2.06	152	1469
46	1.30	2	96	48	125	63	2.00	63	1470
46	1.46	1	48	48	70	70	■	■	1471
53	1.42	1	48	48	68	68	0.91	75	1472
77	1.66	2	180	90	296	133	2.06	128	1473
92	1.58	1	92	92	145	145	1.00	145	1474
99	3.54	1	99	99	350	350	■	350	1475
48	2.84	1	48	48	136	136	1.00	136	1476
53	1.04	1	48	48	83	83	0.91	103	1477
77	1.81	3	230	77	417	129	2.90	140	1478
78	3.37	1	60	60	503	208	0.77	264	1479
313	1.80	3	899	313	1,663	664	3.00	564	1480
166	2.63	2	124	124	329	329	0.74	446	1481
144	2.25	1	143	143	322	322	0.99	334	1482
313	4.25	1	306	306	1,300	1,300	0.98	1,330	1483
313	4.07	1	138	138	563	563	0.44	1,275	1484
53	(a)	2	(a)	(a)	145	72	(a)	(a)	1485
385	1.64	2	358	179	580	290	0.98	580	1486
251	1.55	1	96	96	147	147	0.33	384	1487
313	1.25	1	61	61	76	76	0.19	288	1488
92	1.33	1	3	3	4	4	0.03	123	1489
313	.60	1	41	41	25	25	0.12	191	1490
77	1.16	3	145	73	168	84	1.58	■	1491
313	4.07	1	313	313	1,278	1,278	■	1,278	1492
313	1.82	1	313	313	571	571	1.00	571	1493
160	2.50	1	185	185	461	461	1.10	410	1494
313	4.43	1	307	307	1,363	1,363	0.96	1,380	1495
865	1.55	1	178	178	273	273	■	■	1496

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production prevailing for the establishment was obtained. In referring from this table to those on production by means of

Man- u- fac- tural num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1497	43	Foremen and miners.....	Iron ore.....	United States.....
1498	59	do.....	Iron ore.....	United States.....
1499	10	Foreman and weighman.....	Pig iron.....	Northern district, U. S.....
1500		Forge closers.....	Mixed iron and steel.....	United States.....
1501	86	No. 90 sweepers and roll scalers.....	Muck bar iron.....	Great Britain.....
1502		Forgers.....	Steel billets.....	United States.....
1503		Forgers.....	Mixed iron and steel.....	Great Britain.....
1504	19	do.....	Coke.....	United States.....
1505	23	do.....	Coke.....	United States.....
1506		do.....	Coke.....	Continent of Europe.....
1507	10	Founders.....	Pig iron.....	Northern district, U. S.....
1508	101	do.....	Pig iron.....	Southern district, U. S.....
1509	109	do.....	Pig iron.....	Southern district, U. S.....
1510		do.....	Mixed iron and steel.....	Continent of Europe.....
1511		Furnace helpers.....	Steel billets.....	United States.....
1512		Gaggers.....	Mixed iron and steel.....	Great Britain.....
1513		do.....	Mixed iron and steel.....	Great Britain.....
1514		Gaggers and laborers.....	Mixed iron and steel.....	Great Britain.....
1515		Gagger and straightener.....	Mixed iron and steel.....	Great Britain.....
1516	156	Gallery cutters.....	Bituminous coal.....	Continent of Europe.....
1517		do.....	Bituminous coal.....	Continent of Europe.....
1518	156	Gallery cutter and mixer.....	Bituminous coal.....	Continent of Europe.....
1519	156	Gallery cutters' helpers.....	Bituminous coal.....	Continent of Europe.....
1520	156	Gallery repairers.....	Bituminous coal.....	Continent of Europe.....
1521	156	Gallery repairer and mixer.....	Bituminous coal.....	Continent of Europe.....
1522		Gas producers.....	Mixed iron and steel.....	Great Britain.....
1523		do.....	Mixed iron and steel.....	Great Britain.....
1524		Gas reversers.....	Mixed iron and steel.....	Great Britain.....
1525		Gas tender.....	Mixed iron and steel.....	Great Britain.....
1526		Gasfitter.....	Mixed iron and steel.....	Great Britain.....
1527		Gasfitters' helper.....	Mixed iron and steel.....	Great Britain.....
1528	8	Gasmakers.....	Steel ingots.....	United States.....
1529	7	do.....	Steel ingots.....	United States.....
1530		do.....	Mixed iron and steel.....	United States.....
1531		Gasmaker and hammerman.....	Mixed iron and steel.....	United States.....
1532		Gasmaker and heaters' helper.....	Mixed iron and steel.....	United States.....
1533		Gasmaker and laborer.....	Mixed iron and steel.....	United States.....
1534	8	Gasmakers' helpers.....	Steel ingots.....	United States.....
1535	7	do.....	Steel ingots.....	United States.....
1536	7	Gasmakers' helper and ladle liner.....	Steel ingots.....	United States.....
1537	7	Gasmakers' helper and pit cleaner.....	Steel ingots.....	United States.....
1538	7	Gasmakers' helper and stopper setter.....	Steel ingots.....	United States.....
1539	7	Gasmakers' helper and tongaman.....	Steel ingots.....	United States.....
1540		Gasman.....	Steel blooms.....	United States.....
1541		Gasman's helper.....	Steel blooms.....	United States.....
1542		Gatesmen.....	Mixed iron and steel.....	United States.....
1543		do.....	Mixed iron and steel.....	United States.....
1544		do.....	Mixed iron and steel.....	United States.....
1545		Gaugers.....	Mixed iron and steel.....	Great Britain.....
1546		do.....	Mixed iron and steel.....	Great Britain.....
1547	108	Graders.....	Pig iron.....	Southern district, U. S.....
1548	114	do.....	Pig iron.....	Southern district, U. S.....
1549		Grader, track.....	Bituminous coal.....	United States.....
1550	7	Greasers.....	Steel ingots.....	United States.....
1551		do.....	Steel ingots.....	Continent of Europe.....
1552		do.....	Steel blooms.....	United States.....
1553		do.....	Mixed iron and steel.....	United States.....
1554		do.....	Mixed iron and steel.....	Continent of Europe.....
1555		do.....	Mixed iron and steel.....	Continent of Europe.....
1556		do.....	Mixed iron and steel.....	Great Britain.....
1557		do.....	Bituminous coal.....	United States.....
1558	170	do.....	Bituminous coal.....	Great Britain.....
1559		Griegers.....	Steel ingots.....	Continent of Europe.....
1560		do.....	Mixed iron and steel.....	Great Britain.....
1561		do.....	Mixed iron and steel.....	Great Britain.....
1562	7	Grinders' helpers.....	Steel ingots.....	United States.....
1563	7	Grinders' helper and ladle rocker.....	Steel ingots.....	United States.....
1564	7	Grinders' helper and metal wheeler.....	Steel ingots.....	United States.....
1565	26	Grinding fettlers.....	Muck bar iron.....	Great Britain.....

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless, Tables I to XL. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
312	\$1.47	1	234	234	9415	9415	0.91	9461	1497
313	1.33	1	230	230	345	345	0.83	417	1498
365	1.85½	1	189	189	281	281	0.82	678	1499
312	1.25	3	844	281	1,988	663	2.70	403	1500
99	.74	1	123	93	185	68	—	72	1501
202	2.00	2	3	3	6	3	0.01	404	1502
180	1.74½	9	1,014	113	1,797	199	6.49	273	1503
313	1.48	16	707	44	1,031	64	2.26	456	1504
313	1.00	29	2,643	91	2,651	91	8.46	313	1505
366	.68½	2	1,007	236	690	230	—	230	1506
305	6.76	1	59	59	400	400	0.16	2,478	1507
184	3.91½	2	305	153	1,433	717	1.90	720	1508
265	4.32	1	265	265	1,850	1,850	1.00	1,645	1509
313	1.06½	1	232	232	370	350	1.03	339	1510
202	2.25	2	4	2	9	5	0.92	456	1511
44	(a)	12	(a)	(a)	571	31	(a)	—	1512
53	(a)	12	(a)	(a)	567	49	(a)	(a)	1513
48	.53	2	79	40	42	21	1.85	20	1514
53	(a)	1	(a)	(a)	97	97	(a)	(a)	1515
77	1.01	78	3,394	44	3,437	44	—	78	1516
52	.95	6	2,285	48	271	45	5.48	49	1517
77	1.00	1	74	74	74	74	0.90	77	1518
77	.50½	64	2,654	45	1,448	23	37.00	30	1519
77	.91½	40	1,143	29	1,943	28	14.84	76	1520
77	.14½	1	19	19	16	—	0.25	73	1521
156	1.00½	2	143	72	157	—	0.92	171	1522
53	.03	16	960	60	615	38	18.11	34	1523
53	.50½	2	110	60	50	30	2.25	26	1524
44	.71	1	48	48	34	34	1.00	34	1525
156	.07½	1	188	180	178	178	1.15	181	1526
156	.81	1	166	—	140	140	1.06	132	1527
132	2.50	2	230	150	744	374	2.77	330	1528
230	2.00	2	440	220	572	430	1.91	456	1529
156	1.00½	10	896	70	1,118	112	4.48	240	1530
155	3.03	1	31	31	94	94	0.20	470	1531
155	2.40½	1	52	52	125	125	0.34	373	1532
155	1.34½	1	13	13	18	18	0.08	215	1533
182	1.60	4	305	76	483	123	2.21	213	1534
230	1.60	3	395	132	651	218	1.72	281	1535
230	1.30	1	40	40	70	70	0.17	437	1536
230	1.73½	1	38	38	60	60	0.17	398	1537
230	1.82½	1	74	74	135	135	0.32	430	1538
230	2.00½	1	18	18	40	40	0.07	613	1539
230	2.00	1	14	14	28	28	0.06	400	1540
230	1.65	1	13	13	21	21	0.06	372	1541
312	1.40	4	1,159	290	1,635	409	3.70	442	1542
185	1.50	1	178	178	264	264	1.14	233	1543
312	1.00	2	601	230	697	232	2.21	318	1544
46	.28½	4	148	37	54	14	2.04	18	1545
53	.64½	2	81	41	33	17	1.53	22	1546
365	1.25	1	298	—	371	371	0.81	457	1547
365	1.10	2	223	112	245	123	0.67	401	1548
313	1.50	1	67	67	101	101	0.21	472	1549
230	1.85	4	538	135	968	242	2.34	425	1550
78	.53½	7	433	62	231	33	3.56	42	1551
122	1.80	2	303	152	352	276	2.30	240	1552
168	1.47	2	53	27	78	—	0.32	247	1553
313	.72½	1	274	274	190	190	0.88	227	1554
313	.36½	9	1,422	158	517	57	4.54	114	1555
44	.53	5	367	53	141	28	5.57	25	1556
313	.91½	2	220	115	167	84	0.73	254	1557
91	1.10½	2	153	77	—	—	—	101	1558
27	.68½	6	104	17	71	12	2.85	18	1559
46	(a)	1	(a)	(a)	—	48	(a)	(a)	1560
53	(a)	11	(a)	(a)	445	41	(a)	(a)	1561
230	1.05	6	534	89	650	143	2.28	377	1562
230	1.71	1	323	323	386	386	0.87	394	1563
230	2.28½	1	180	180	430	430	0.79	344	1564
98	.75	2	380	190	280	180	2.83	74	1565

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation, the facts for the periods are of equal length. The establishment numbers relate to the cost of production procedure for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1598	179	Guards.	Bituminous coal	Great Britain
1597		Guides	Steel billets	United States
1598		Guides and tonguemen	Steel billets	United States
1599		Guide and transmitter	Steel billets	United States
1570		Guliotine tenders	Mixed iron and steel	Great Britain
1571	54	Guttermen	Pig iron	Northern district, U. S.
1572		do	Mixed iron and steel	Continent of Europe
1573		Hammer drivers	Steel billets	United States
1574		do	Mixed iron and steel	United States
1575		do	Mixed iron and steel	United States
1576		Hammer lifter	Mixed iron and steel	Continent of Europe
1577		Hammer tenders	Mixed iron and steel	Continent of Europe
1578		do	Mixed iron and steel	Continent of Europe
1579		Hammermen	Steel rails	Continent of Europe
1580		do	Mixed iron and steel	United States
1581		do	Mixed iron and steel	United States
1582		do	Mixed iron and steel	Continent of Europe
1583		do	Mixed iron and steel	Great Britain
1584		do	Mixed iron and steel	Great Britain
1585		Hammermen and beaters' helper	Mixed iron and steel	United States
1586		Hammermen and laborers	Mixed iron and steel	United States
1587		Hammermen's helpers	Mixed iron and steel	United States
1588		Hammermen's helpers and laborers	Mixed iron and steel	United States
1589		Hammermiths	Mixed iron and steel	Continent of Europe
1590		do	Mixed iron and steel	Continent of Europe
1591	179	Hoppers-on	Bituminous coal	Great Britain
1592	37	Haulers	Pig iron	Great Britain
1593		do	Mixed iron and steel	Great Britain
1594		do	Mixed iron and steel	Great Britain
1595		do	Bituminous coal	United States
1596		do	Bituminous coal	United States
1597	184	do	Bituminous coal	Continent of Europe
1598		Haulers and laborers	Bituminous coal	United States
1599		Haulers and miners	Bituminous coal	United States
1600		Hauler and switchman	Bituminous coal	United States
1601	35	Haulers and tracklayers	Bituminous coal	United States
1602		Hauler and trammer	Bituminous coal	United States
1603	35	Hauler and trammer	Bituminous coal	United States
1604		Hauler and water boiler	Bituminous coal	United States
1605		Head cutters	Bituminous coal	United States
1606		Head cutters and miners	Bituminous coal	United States
1607		Heaters	Mixed iron and steel	United States
1608	8	Heaters	Finished bar iron	United States
1609	9	do	Finished bar iron	United States
1610	29	do	Finished bar iron	Great Britain
1611		do	Steel ingots	Continent of Europe
1612		do	Steel billets	United States
1613		do	Steel blooms	United States
1614		do	Steel blooms	United States
1615		do	Steel rails	Continent of Europe
1616		do	Steel rails	Continent of Europe
1617		do	Mixed iron and steel	United States
1618		do	Mixed iron and steel	United States
1619		do	Mixed iron and steel	United States
1620		do	Mixed iron and steel	United States
1621		do	Mixed iron and steel	United States
1622		do	Mixed iron and steel	United States
1623		do	Mixed iron and steel	United States
1624		do	Mixed iron and steel	United States
1625		do	Mixed iron and steel	United States
1626		do	Mixed iron and steel	Continent of Europe
1627		do	Mixed iron and steel	Continent of Europe
1628		do	Mixed iron and steel	Continent of Europe
1629		do	Mixed iron and steel	Continent of Europe
1630		do	Mixed iron and steel	Continent of Europe
1631		do	Mixed iron and steel	Great Britain
1632		do	Mixed iron and steel	Great Britain
1633		do	Mixed iron and steel	Great Britain

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless then, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- ginal num- ber.	
		Different employers.	Days of work done.		Earnings.		Necessary employers.		Consequent average earnings per em- ployed.
			Total.	Average.	Total.	Average.			
91	\$1.00	2	153	77	\$164	\$77	1.68	262	1866
202	1.84	9	96	11	177	20	0.47	272	1667
202	2.03	2	33	17	97	31	0.10	410	1667
202	2.04	1	115	115	226	223	0.87	412	1668
48	.80	7	205	44	185	26	6.36	29	1670
129	1.40	4	430	105	584	147	3.44	171	1671
313	.54	1	308	308	186	186	0.98	169	1673
302	2.62	4	283	62	487	167	1.25	523	1673
158	1.00	1	119	119	159	159	0.77	246	1674
312	(a)	5	(a)	(a)	2,806	561	(a)	(a)	1673
312	.50	1	202	202	150	150	0.96	155	1676
313	.98	4	1,840	307	1,575	263	5.88	268	1677
312	.45	1	356	256	183	183	1.16	142	1677
77	1.05	2	197	99	206	99	2.56	81	1679
156	0.50	1	114	114	629	629	0.74	855	1680
313	(a)	4	(a)	(a)	4,414	1,104	(a)	(a)	1681
77	1.01	2	206	103	209	70	2.65	79	1682
48	.55	3	245	49	124	27	8.10	26	1683
156	.97	2	316	158	308	154	2.03	155	1684
183	1.43	1	136	136	198	198	0.68	226	1686
185	1.40	1	130	130	182	182	0.84	217	1686
155	1.71	2	230	77	295	132	1.48	206	1687
156	2.04	3	130	65	266	123	0.84	317	1687
312	1.02	11	2,180	198	2,230	203	6.97	320	1688
313	.56	2	737	364	411	206	2.23	177	1690
91	1.14	2	88	45	104	52	0.98	106	1691
91	.54	6	544	91	208	60	3.96	50	1692
48	.50	18	563	48	281	23	11.72	24	1692
59	.48	9	420	47	201	22	7.92	25	1694
212	1.84	5	267	53	401	80	0.83	578	1696
312	(a)	161	(a)	(a)	6,733	84	(a)	(a)	1698
77	.50	2	143	72	41	21	1.28	23	1697
312	(a)	13	(a)	(a)	1,494	113	(a)	(a)	1696
312	(a)	27	(a)	(a)	4,022	149	(a)	(a)	1699
312	1.50	1	2	2	3	3	0.81	470	1690
312	2.08	3	891	201	1,242	414	1.93	944	1691
312	2.18	1	241	241	518	518	0.77	672	1692
312	1.49	1	89	89	103	103	0.22	467	1693
312	.55	1	82	82	34	34	0.20	172	1694
305	(a)	12	(a)	(a)	1,074	90	(a)	(a)	1695
202	(a)	17	(a)	(a)	6,254	403	(a)	(a)	1696
188	1.90	4	302	91	722	181	2.15	295	1697
290	5.05	7	1,821	217	7,683	1,630	8.08	1,511	1698
290	7.03	2	472	236	336	168	2.010	209	1699
90	2.03	10	1,302	81	2,676	167	13.15	269	1610
27	.77	2	26	13	20	10	0.96	21	1611
202	2.84	13	1,381	118	4,480	346	7.58	564	1612
132	3.21	5	442	88	2,305	461	3.35	658	1613
230	7.42	2	307	184	2,724	1,362	1.50	1,107	1614
77	1.09	6	401	67	487	73	5.21	81	1615
79	1.50	10	589	58	572	87	7.17	101	1616
312	(a)	12	(a)	(a)	5,263	474	(a)	(a)	1617
286	(a)	20	(a)	(a)	13,148	657	(a)	(a)	1617
286	(a)	7	(a)	(a)	2,678	411	(a)	(a)	1619
312	8.64	25	4,218	169	23,911	956	13.51	1,787	1620
287	0.91	9	1,997	222	12,804	1,534	8.05	1,984	1621
108	(a)	17	(a)	(a)	2,491	147	(a)	(a)	1622
180	2.84	18	654	44	2,513	108	4.22	360	1623
312	(a)	24	(a)	(a)	19,533	811	(a)	(a)	1624
312	4.37	20	1,004	170	7,421	743	5.43	1,370	1625
77	1.12	8	261	32	253	30	3.39	60	1626
312	.91	63	12,308	222	11,258	212	20.32	238	1627
92	1.16	35	1,787	50	1,056	30	12.31	102	1628
312	.68	64	12,842	210	7,035	119	44.23	173	1629
79	1.34	10	653	65	879	88	8.27	106	1630
48	(a)	69	(a)	(a)	2,548	36	(a)	(a)	1631
156	(a)	7	(a)	(a)	2,220	317	(a)	(a)	1632
230	(a)	20	(a)	(a)	1,140	87	(a)	(a)	1633

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the data for the periods are of equal length. The establishment numbers relate to the cost of production premium for the establishment was obtained. In referring from this table to those on production by means of

Man- ual num- ber.	Es- ta- blish- ment num- ber.	Occupation.	Industry.	Locality.
1634		Heaters and heaters' helpers	Mixed iron and steel	United States
1635		do	Mixed iron and steel	United States
1636		do	Mixed iron and steel	United States
1637		Heater and hooker	Mixed iron and steel	United States
1638		Heaters and laborers	Mixed iron and steel	United States
1639		do	Mixed iron and steel	United States
1640		do	Mixed iron and steel	United States
1641		Heater and roller	Mixed iron and steel	United States
1642		Heater and rougher	Mixed iron and steel	United States
1643	8	Heaters' helpers	Finished bar iron	United States
1644	8	do	Finished bar iron	United States
1645	29	do	Finished bar iron	Great Britain
1646		do	Steel billets	United States
1647		do	Steel blooms	United States
1648		do	Steel blooms	United States
1649		do	Steel rails	Continent of Europe
1650		do	Steel rails	Continent of Europe
1651		do	Mixed iron and steel	United States
1652		do	Mixed iron and steel	United States
1653		do	Mixed iron and steel	United States
1654		do	Mixed iron and steel	United States
1655		do	Mixed iron and steel	United States
1656		do	Mixed iron and steel	United States
1657		do	Mixed iron and steel	United States
1658		do	Mixed iron and steel	United States
1659		do	Mixed iron and steel	Continent of Europe
1660		do	Mixed iron and steel	Continent of Europe
1661		do	Mixed iron and steel	Great Britain
1662		do	Mixed iron and steel	Great Britain
1663		Heaters' helper and hooker	Steel billets	United States
1664		Heaters' helpers and laborers	Mixed iron and steel	United States
1665		do	Mixed iron and steel	United States
1666		do	Mixed iron and steel	United States
1667		Heaters' helper and lighter-up	Steel billets	United States
1668		Heaters' helpers and piers	Mixed iron and steel	United States
1669		Heaters' helper and puddler's helper	Mixed iron and steel	United States
1670		Heaters' helper and scrapper's helper	Mixed iron and steel	United States
1671		Heaters' helper and tongman	Steel billets	United States
1672		Heaters' helpers and transmitters	Steel billets	United States
1673		Heaters' helpers	Mixed iron and steel	United States
1674	9	Helpers	Pig iron	Northern district, U. S.
1675	32	do	Pig iron	Northern district, U. S.
1676	42	do	Pig iron	Northern district, U. S.
1677	49	do	Pig iron	Northern district, U. S.
1678	57	do	Pig iron	Northern district, U. S.
1679	83	do	Pig iron	Northern district, U. S.
1680	103	do	Pig iron	Southern district, U. S.
1681	27	do	Pig iron	Great Britain
1682		do	Mixed iron and steel	United States
1683		do	Mixed iron and steel	United States
1684		do	Mixed iron and steel	Continent of Europe
1685	7	Helper, lamp	Muck bar iron	United States
1686	9	Helpers and laborers	Pig iron	Northern district, U. S.
1687	33	do	Pig iron	Northern district, U. S.
1688	42	do	Pig iron	Northern district, U. S.
1689		do	Mixed iron and steel	United States
1690	9	Helper and metal carrier	Pig iron	Northern district, U. S.
1691	58	Helper and moulder	Pig iron	Northern district, U. S.
1692	9	Helper and ore pier	Pig iron	Northern district, U. S.
1693		Helpers	Mixed iron and steel	Great Britain
1694		do	Mixed iron and steel	Great Britain
1695	67	Holders	Pig iron	Northern district, U. S.
1696	109	do	Pig iron	Southern district, U. S.
1697		Holders-up	Mixed iron and steel	Great Britain
1698		Hookers	Steel billets	United States
1699		do	Mixed iron and steel	United States
1700		do	Mixed iron and steel	United States
1701		do	Mixed iron and steel	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless the Tables I to XL. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
812	(a)	1	(a)	(a)	812	812	(a)	(a)	1634
812	\$4.16	5	200	122	2,787	767	2.91	\$1,304	1635
153	2.48	1	58	58	153	153	0.38	385	1636
813	(a)	1	(a)	(a)	284	284	(a)	(a)	1637
813	(a)	1	(a)	(a)	148	148	(a)	(a)	1638
168	1.33	1	108	108	132	132	0.80	222	1639
156	2.41	2	191	95	461	231	1.24	274	1640
361	(a)	1	(a)	(a)	212	212	(a)	(a)	1641
286	(a)	1	(a)	(a)	75	75	(a)	(a)	1642
260	1.20	7	1,763	243	2,050	294	5.00	301	1643
286	2.60	6	1,338	223	2,578	595	4.68	763	1644
98	1.09	10	800	80	875	88	6.08	108	1645
202	2.05	20	1,623	81	2,932	108	9.62	415	1646
132	2.31	5	408	82	1,335	271	2.10	437	1647
230	6.53	4	870	218	2,997	902	3.61	1,042	1648
77	.74	4	214	54	182	46	3.17	87	1649
78	.82	28	1,711	45	1,408	37	21.83	64	1650
813	(a)	5	(a)	(a)	559	112	(a)	(a)	1651
286	(a)	5	(a)	(a)	1,706	341	(a)	(a)	1652
286	(a)	9	(a)	(a)	1,887	189	(a)	(a)	1653
312	2.10	30	4,010	134	8,793	293	12.82	808	1654
287	1.30	1	278	278	374	374	0.97	386	1655
158	1.70	25	790	32	1,318	54	5.00	284	1656
312	(a)	9	(a)	(a)	4,218	482	(a)	(a)	1657
312	2.25	14	2,347	168	5,276	377	7.49	704	1658
312	.42	8	1,040	243	610	191	6.20	131	1659
92	.70	47	2,309	51	1,046	38	26.07	1009	1660
156	.48	0	648	108	314	82	4.16	76	1661
83	(a)	10	(a)	(a)	356	29	(a)	(a)	1662
292	2.47	1	99	99	245	245	0.48	500	1663
312	1.85	6	781	157	1,450	280	2.50	579	1664
155	1.61	2	63	32	85	48	0.41	224	1665
812	3.00	2	348	123	408	205	0.79	520	1666
202	1.47	1	57	57	107	107	0.28	279	1667
812	1.79	2	480	220	823	412	1.47	580	1668
312	2.18	1	141	141	301	304	0.45	675	1669
155	1.11	1	37	37	41	41	0.34	172	1670
202	2.28	1	85	85	194	194	0.42	461	1671
202	2.17	2	122	61	285	133	0.60	439	1672
287	1.80	4	489	122	972	231	1.70	542	1673
283	2.49	8	498	62	1,165	139	1.29	909	1674
865	1.85	8	1,905	228	2,170	280	5.22	507	1675
363	1.08	9	2,452	272	4,091	451	6.72	905	1676
363	1.40	7	1,358	194	1,809	264	3.72	535	1677
365	1.05	8	1,848	231	2,047	261	3.06	602	1678
92	1.43	4	360	90	524	131	2.81	134	1679
365	1.26	13	907	70	1,128	87	2.48	457	1680
91	.78	21	2,080	98	1,554	80	22.63	69	1681
286	1.77	20	2,095	68	5,490	152	10.83	507	1682
287	1.87	1	8	8	15	15	0.63	538	1683
312	2.25	102	12,440	121	4,785	46	62.94	112	1684
155	1.50	1	18	18	24	24	0.18	223	1685
865	2.02	8	1,246	156	2,517	315	2.42	737	1686
365	1.48	2	81	41	120	60	0.22	541	1687
365	1.42	1	320	320	470	470	0.80	520	1688
812	1.70	2	142	71	243	121	0.45	543	1689
865	2.38	1	232	232	553	552	0.84	270	1690
365	1.72	1	247	247	507	507	0.85	639	1691
865	1.87	1	8	8	15	15	0.02	684	1692
48	.63	1	30	30	19	19	0.63	30	1693
63	.63	1	48	48	80	30	0.31	33	1694
865	1.80	1	323	323	585	585	0.91	654	1695
265	1.45	1	308	308	447	447	0.84	530	1696
156	2.27	5	506	120	1,419	284	3.83	70	1697
292	2.70	11	741	67	2,003	182	3.87	516	1698
713	1.25	17	1,823	90	1,913	119	4.86	293	1699
154	1.62	12	254	20	412	73	1.04	351	1700
312	1.54	3	504	168	778	286	1.81	482	1701

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Estab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1702		Hookers—concluded	Mixed iron and steel	Continent of Europe
1703		do	Mixed iron and steel	Continent of Europe
1704		do	Mixed iron and steel	Great Britain
1705		do	Mixed iron and steel	Great Britain
1706		Hookers, tumble	Steel billets	United States
1707	7	Hookers and laborers	Steel ingots	United States
1708		do	Mixed iron and steel	United States
1709		do	Mixed iron and steel	United States
1710		Hookers' and puddlers' helpers	Mixed iron and steel	United States
1711		Hookers and rollers' helpers	Mixed iron and steel	Continent of Europe
1712		Hookers and roughers	Mixed iron and steel	United States
1713		Hookers and roughers-down	Mixed iron and steel	United States
1714		Hookers and screwmen	Steel billets	United States
1715		Hookers and straighteners	Mixed iron and steel	United States
1716		Hookers and tongmen	Steel billets	United States
1717	20	Hookers-in	Finished bar iron	Great Britain
1718		do	Mixed iron and steel	United States
1719		do	Mixed iron and steel	United States
1720	95	Hookers-on	Bituminous coal	United States
1721	107	do	Bituminous coal	United States
1722		Hookers-out	Mixed iron and steel	United States
1723		Hookers-out and laborers	Mixed iron and steel	United States
1724	7	Hookers-up	Muck bar iron	United States
1725	8	do	Muck bar iron	United States
1726	17	do	Muck bar iron	United States
1727	26	do	Muck bar iron	United States
1728		do	Steel blooms	United States
1729		do	Steel rails	Continent of Europe
1730		do	Steel rails	Continent of Europe
1731		do	Mixed iron and steel	United States
1732		do	Mixed iron and steel	United States
1733		do	Mixed iron and steel	United States
1734		do	Mixed iron and steel	United States
1735		do	Mixed iron and steel	United States
1736		do	Mixed iron and steel	United States
1737	7	do	Mixed iron and steel	United States
1738		do	Mixed iron and steel	United States
1739		do	Mixed iron and steel	Continent of Europe
1740		do	Mixed iron and steel	Continent of Europe
1741		do	Mixed iron and steel	Continent of Europe
1742		Hookers-up and laborers	Mixed iron and steel	United States
1743		do	Mixed iron and steel	United States
1744		do	Mixed iron and steel	United States
1745		Hookers-up and pillar	Mixed iron and steel	United States
1746		Hookers-up and roughers	Mixed iron and steel	United States
1747		do	Mixed iron and steel	United States
1748		Hookers-up and straightener	Mixed iron and steel	United States
1749		Horsemen	Pig iron	Great Britain
1750	29	do	Finished bar iron	Great Britain
1751	170	do	Bituminous coal	Great Britain
1752	170	Horseboor	Bituminous coal	Great Britain
1753	65	Hostlers	Pig iron	Northern district, U. S.
1754		do	Mixed iron and steel	Continent of Europe
1755	107	do	Bituminous coal	United States
1756	33	Hostlers and laborers	Pig iron	Northern district, U. S.
1757	109	do	Pig iron	Southern district, U. S.
1758		Hot pillars	Mixed iron and steel	Continent of Europe
1759		Hot-bank men	Mixed iron and steel	Great Britain
1760		do	Mixed iron and steel	Great Britain
1761		Hot bed hands	Steel rails	Continent of Europe
1762		do	Steel rails	Continent of Europe
1763		do	Mixed iron and steel	Continent of Europe
1764	49	Hot-blast men	Pig iron	Northern district, U. S.
1765	55	do	Pig iron	Northern district, U. S.
1766	101	do	Pig iron	Southern district, U. S.
1767	109	do	Pig iron	Southern district, U. S.
1768	34	do	Pig iron	Great Britain
1769	37	do	Pig iron	Great Britain

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total	Average.	Total	Average.			
313	90.82	1	2,898	243	82,450	9183	12.41	8197	1702
313	90.82	40	9,989	249	8,275	187	81.11	197	1703
46	46	37	1,132	31	531	14	23.66	23	1704
58	58	6	321	54	180	32	8.06	31	1705
202	2.46	5	430	86	1,491	296	2.12	1706	1706
281	2.65	1	19	19	39	39	0.08	915	1707
318	1.67	1	104	104	184	184	0.33	494	1708
185	1.42	2	19	19	33	27	0.34	232	1709
313	(a)	2	(a)	(a)	84	47	(a)	(a)	1710
313	92	1	306	306	130	130	0.67	195	1711
313	1.50	1	3	3	3	3	0.01	470	1712
135	2.30	1	86	86	115	115	0.32	367	1713
202	2.27	1	69	69	187	187	0.34	490	1714
313	1.01	4	564	141	872	143	1.80	318	1715
202	2.51	2	206	103	602	301	1.80	508	1716
96	97	2	191	96	187	94	1.92	97	1717
165	1.73	2	98	49	170	85	0.63	289	1718
313	2.14	5	1,047	209	2,240	448	2.33	670	1719
313	2.64	5	137	27	116	23	0.44	295	1720
313	1.48	2	296	148	409	206	0.63	448	1721
185	1.98	4	128	32	280	60	0.63	303	1722
156	1.44	1	45	45	68	68	0.29	224	1723
143	1.27	12	411	34	531	43	2.88	181	1724
296	2.16	2	446	223	964	482	1.58	618	1725
296	2.08	2	298	149	792	396	1.04	780	1726
296	1.75	2	390	195	688	344	1.36	501	1727
296	4.29	14	1,933	138	8,132	581	8.40	968	1728
77	88	5	334	67	227	45	4.84	60	1729
77	85	44	3,317	75	1,884	43	29.71	67	1730
296	1.64	14	1,564	112	2,670	194	3.47	470	1731
296	(a)	2	(a)	(a)	294	147	(a)	(a)	1732
313	1.67	18	2,398	133	4,010	223	7.86	523	1733
297	1.78	5	1,139	228	1,976	394	4.04	483	1734
198	(a)	8	(a)	(a)	864	74	(a)	(a)	1735
156	1.66	1	18	18	30	30	0.12	354	1736
313	(a)	2	(a)	(a)	2,031	677	(a)	(a)	1737
77	2.00	4	970	243	1,640	485	1.80	626	1738
77	4.60	4	250	72	134	34	3.75	86	1739
92	80	41	1,315	32	899	29	1.80	51	1740
76	56	14	843	60	487	33	10.67	64	1741
296	(a)	1	(a)	(a)	138	138	(a)	(a)	1742
313	1.16	2	246	123	291	146	0.79	379	1743
165	1.48	1	24	24	35	35	0.15	338	1744
313	1.66	1	9	9	14	14	1.16	467	1745
296	(a)	1	(a)	(a)	172	172	(a)	(a)	1746
313	2.91	2	437	146	394	197	1.40	490	1747
312	1.50	1	190	190	297	297	1.40	470	1748
135	81	1	132	132	107	107	1.10	109	1749
90	98	2	234	117	206	103	2.26	91	1750
91	88	13	695	77	836	74	1.80	86	1751
91	1.05	1	78	78	82	82	0.66	96	1752
306	1.45	1	362	362	526	526	0.99	539	1753
318	1.40	1	347	347	139	139	1.11	125	1754
318	1.90	1	116	116	173	173	0.37	497	1755
365	1.60	1	366	366	583	583	1.00	593	1756
365	1.97	1	84	84	90	90	0.22	391	1757
90	44	5	283	57	136	27	5.17	41	1758
48	38	22	1,261	57	495	15	25.36	18	1759
63	(a)	20	(a)	(a)	644	32	(a)	(a)	1760
77	94	2	234	117	104	52	3.61	63	1761
76	87	16	1,020	64	536	33	13.08	1703	1762
77	43	2	91	46	38	19	1.18	32	1763
245	1.83	1	368	368	561	561	1.00	561	1764
181	1.58	4	887	222	936	234	3.23	298	1765
263	1.18	1	326	326	376	376	0.90	418	1766
263	1.60	7	1,548	221	2,172	310	6.23	512	1767
81	78	2	182	91	137	69	2.60	69	1768
81	79	2	192	96	141	71	2.11	67	1769

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL.

* (Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Man- ual num- ber.	Es- ta- blish- ment num- ber.	Occupation.	Industry.	Locality.
1776	85	Hot-blast man and scrapper.....	Pig iron.....	Northern district, U. S.
1771	10	Hot-rinder men.....	Pig iron.....	Northern district, U. S.
1772	10	Hot-rinder men and laborers.....	Pig iron.....	Northern district, U. S.
1773	170	Hurriers.....	Bituminous coal.....	Great Britain.....
1774		Hydraulic men.....	Steel ingots.....	Continent of Europe.....
1775	154	Inclined plane men.....	Bituminous coal.....	Continent of Europe.....
1776	101	Incline men.....	Pig iron.....	Southern district, U. S.
1777		Ingot carriers.....	Steel ingots.....	Continent of Europe.....
1778		Ingot carriers' helpers.....	Steel ingots.....	Continent of Europe.....
1779		Ingot chargers.....	Steel rails.....	Continent of Europe.....
1780	7	Ingot loaders.....	Steel ingots.....	United States.....
1781		do.....	Steel ingots.....	Continent of Europe.....
1782		do.....	Mixed iron and steel.....	Continent of Europe.....
1783		Ingot loader and laborer.....	Steel ingots.....	Continent of Europe.....
1784	7	Ingot loader and mould capper.....	Steel ingots.....	United States.....
1785	7	Ingot loader and mould swinger.....	Steel ingots.....	United States.....
1786		Ingot wheelers.....	Steel rails.....	Continent of Europe.....
1787		do.....	Mixed iron and steel.....	Continent of Europe.....
1788		Ingot wheelers' helpers.....	Steel rails.....	Continent of Europe.....
1789	1	Inspectors.....	Steel ingots.....	United States.....
1790		do.....	Steel billets.....	United States.....
1791		do.....	Steel rails.....	Continent of Europe.....
1792		do.....	Mixed iron and steel.....	Great Britain.....
1793		Inspector, bloom.....	Mixed iron and steel.....	Great Britain.....
1794	85	Inspectors, car.....	Pig iron.....	Northern district, U. S.
1795	1	Inspector mould.....	Steel ingots.....	United States.....
1796		Inspectors, plank.....	Mixed iron and steel.....	Continent of Europe.....
1797		Inspectors rail.....	Mixed iron and steel.....	Great Britain.....
1798	1	Inspector stock.....	Steel ingots.....	United States.....
1799		Inspector and stamper.....	Steel billets.....	United States.....
1800		Inspector and weighman.....	Steel billets.....	United States.....
1801	41	Iron barrowman.....	Pig iron.....	Northern district, U. S.
1802	101	Iron breakers.....	Pig iron.....	Southern district, U. S.
1803		do.....	Steel ingots.....	Continent of Europe.....
1804		do.....	Mixed iron and steel.....	Continent of Europe.....
1805		do.....	Mixed iron and steel.....	Continent of Europe.....
1806	101	Iron carriers.....	Pig iron.....	Southern district, U. S.
1807	191	Iron graders.....	Pig iron.....	Southern district, U. S.
1808	22	Iron handlers.....	Pig iron.....	Northern district, U. S.
1809	32	do.....	Pig iron.....	Northern district, U. S.
1810	42	do.....	Pig iron.....	Northern district, U. S.
1811	49	do.....	Pig iron.....	Northern district, U. S.
1812	97	do.....	Pig iron.....	Northern district, U. S.
1813	95	do.....	Pig iron.....	Southern district, U. S.
1814	103	do.....	Pig iron.....	Southern district, U. S.
1815	100	do.....	Pig iron.....	Southern district, U. S.
1816	114	do.....	Pig iron.....	Southern district, U. S.
1817	1	do.....	Steel ingots.....	United States.....
1818	103	Iron handler and keeper.....	Pig iron.....	Southern district, U. S.
1819	22	Iron handlers and laborers.....	Pig iron.....	Northern district, U. S.
1820	33	do.....	Pig iron.....	Northern district, U. S.
1821	103	do.....	Pig iron.....	Southern district, U. S.
1822	1	do.....	Steel ingots.....	United States.....
1823	1	Iron handler and screener.....	Steel ingots.....	United States.....
1824	1	Iron handler and stocker.....	Steel ingots.....	United States.....
1825	1	Iron handlers and unloaders.....	Steel ingots.....	United States.....
1826	101	Iron loaders.....	Pig iron.....	Southern district, U. S.
1827		do.....	Mixed iron and steel.....	Continent of Europe.....
1828		do.....	Mixed iron and steel.....	Continent of Europe.....
1829		Iron melters.....	Steel ingots.....	Continent of Europe.....
1830	7	Iron melter and regulator.....	Steel ingots.....	United States.....
1831	10	Iron men.....	Pig iron.....	Northern district, U. S.
1832	170	do.....	Bituminous coal.....	Great Britain.....
1833	10	Iron men and laborers.....	Pig iron.....	Northern district, U. S.
1834	10	Iron man and stock preparer.....	Pig iron.....	Northern district, U. S.
1835	41	Iron movers.....	Pig iron.....	Northern district, U. S.
1836	41	Iron mover and moulders' helper.....	Pig iron.....	Northern district, U. S.
1837	10	Iron piler.....	Pig iron.....	Northern district, U. S.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XL Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.	
		Different employés.	Days of work done.		Earnings.		Necessary employés.		Consequent average earnings per em- ployé.
			Total	Average.	Total	Average.			
181	1.50½	1	163	163	268	268	0.93	289	1770
365	1.50	10	1,038	104	1,538	154	2.84	541	1771
365	1.41½	4	861	215	1,220	305	2.36	517	1772
91	.59	116	8,700	75	5,148	44	25.60	54	1773
78	.51	4	271	68	138	35	3.47	40	1774
77	.58½	20	751	38	401	20	9.76	41	1775
184	1.15	2	310	155	342	181	1.68	215	1776
78	.72	3	189	63	136	45	2.42	56	1777
78	.50	2	36	18	18	9	0.46	39	1778
78	.56½	8	475	59	209	24	6.09	44	1779
230	5.19½	6	915	153	4,754	792	2.98	1,195	1780
27	.79½	11	208	19	165	15	7.70	21	1781
313	.46	26	3,967	152	1,818	70	12.64	144	1782
27	.66½	1	8	8	2	2	6.11	18	1783
230	4.38½	1	186	186	816	816	6.81	1,000	1784
230	5.24½	1	140	140	734	734	0.61	1,206	1785
78	.67½	14	789	56	532	38	10.12	53	1786
313	.47½	1	167	167	79	79	0.53	148	1787
78	.56	7	252	50	197	28	4.51	44	1788
313	2.70	1	61	61	165	165	0.19	847	1789
202	2.33½	2	18	9	42	21	0.08	471	1790
78	.53	8	197	66	104	35	2.53	41	1791
156	1.21½	2	265	133	322	161	1.70	190	1792
48	.81	1	48	48	39	39	1.00	39	1793
365	1.56	5	1,301	260	2,029	406	2.56	569	1794
313	1.25	1	192	192	240	240	0.61	391	1795
77	.66½	2	86	43	57	29	1.11	51	1796
48	.99	2	90	45	89	45	1.88	47	1797
313	2.25	1	136	136	300	300	0.43	690	1798
202	1.96½	1	54	54	108	108	0.27	397	1799
202	1.93½	1	142	142	275	275	0.70	391	1800
167	1.65	1	78	78	129	129	0.47	276	1801
144	(a)	15	(a)	(a)	2,546	170	(a)	(a)	1802
78	.47½	6	247	41	117	20	3.17	37	1803
313	.48	2	138	69	66	33	6.44	150	1804
79	.68½	2	146	73	100	50	1.86	54	1805
184	1.93	22	1,408	68	2,893	132	8.14	256	1806
184	1.96	1	153	153	300	300	0.83	361	1807
365	1.70	25	2,009	80	3,412	136	5.50	620	1808
365	2.32	11	1,828	166	4,242	346	5.01	847	1809
365	2.23	4	1,460	365	3,258	815	4.00	815	1810
365	1.96	12	1,591	133	3,122	260	4.36	716	1811
365	1.61	11	2,583	235	4,157	378	7.07	567	1812
334	1.40½	6	381	64	535	89	1.14	469	1813
365	1.41	17	2,680	158	3,773	222	7.34	514	1814
365	1.21½	18	2,000	111	2,426	135	5.48	443	1815
365	1.10	6	1,062	180	1,181	197	2.96	398	1816
313	1.62½	61	2,018	33	3,342	55	6.45	518	1817
365	1.72	1	312	312	536	536	0.65	627	1818
365	1.55½	1	18	18	28	28	0.05	568	1819
365	1.70	5	837	67	573	115	0.92	621	1820
365	1.59	3	171	57	272	91	0.47	581	1821
313	1.45	15	354	24	513	34	1.13	454	1822
313	1.30	1	46	46	64	64	0.15	435	1823
313	1.34½	1	3	3	4	4	0.01	417	1824
313	1.48½	6	37	6	55	9	0.12	465	1825
184	(a)	9	(a)	(a)	1,603	178	(a)	(a)	1826
313	.55½	21	5,747	274	3,192	152	18.36	174	1827
313	.55	6	1,202	200	664	111	2.84	172	1828
77	.79½	7	465	66	369	53	6.04	61	1829
230	2.70	1	118	148	409	409	0.64	636	1830
365	1.76	17	2,868	169	5,046	297	7.86	642	1831
91	1.62½	2	152	76	156	78	1.66	93	1832
345	1.47	8	663	83	975	122	1.82	537	1833
365	1.63	1	65	65	106	106	0.18	505	1834
167	1.51½	9	1,303	145	1,975	219	7.86	253	1835
167	1.57	1	167	167	262	262	1.00	262	1836
365	1.60½	1	3	3	5	5	0.01	C.6	1837

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented by the establishment was obtained. In referring from this table to those on production by means of

Man- ual num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1898	101	Iron pier—concluded.....	Pig iron.....	Southern district, U. S.
1899	7	Iron pourers.....	Steel ingots.....	United States.....
1900		do.....	Steel ingots.....	Continent of Europe.....
1901		do.....	Steel ingots.....	Continent of Europe.....
1902	7	Iron pourer and laborer.....	Steel ingots.....	United States.....
1903	43	Iron sorters.....	Pig iron.....	Northern district, U. S.
1904	36	do.....	Mixed bar iron.....	Great Britain.....
1905	7	Iron stockers.....	Steel ingots.....	United States.....
1906		do.....	Steel ingots.....	Continent of Europe.....
1907		do.....	Steel ingots.....	Continent of Europe.....
1908	7	Iron stocker and scrap loader.....	Steel ingots.....	United States.....
1909		Iron tester.....	Mixed iron and steel.....	United States.....
1910		Iron tester and stoker.....	Mixed iron and steel.....	United States.....
1911		Iron wheelers.....	Pig iron.....	Continent of Europe.....
1912		do.....	Mixed iron and steel.....	Continent of Europe.....
1913		do.....	Mixed iron and steel.....	Continent of Europe.....
1914		do.....	Mixed iron and steel.....	Continent of Europe.....
1915		do.....	Mixed iron and steel.....	Great Britain.....
1916	101	Iron wringers.....	Pig iron.....	Southern district, U. S.
1917	1	Janitors.....	Steel ingots.....	United States.....
1918		do.....	Steel billets.....	United States.....
1919		do.....	Mixed iron and steel.....	United States.....
1920		Joiners.....	Pig iron.....	Great Britain.....
1921	30	do.....	Finished bar iron.....	Great Britain.....
1922		do.....	Mixed iron and steel.....	Continent of Europe.....
1923		do.....	Mixed iron and steel.....	Continent of Europe.....
1924	0	Keepers.....	Pig iron.....	Northern district, U. S.
1925	10	do.....	Pig iron.....	Northern district, U. S.
1926	23	do.....	Pig iron.....	Northern district, U. S.
1927	32	do.....	Pig iron.....	Northern district, U. S.
1928	41	do.....	Pig iron.....	Northern district, U. S.
1929	43	do.....	Pig iron.....	Northern district, U. S.
1930	40	do.....	Pig iron.....	Northern district, U. S.
1931	85	do.....	Pig iron.....	Northern district, U. S.
1932	50	do.....	Pig iron.....	Northern district, U. S.
1933	67	do.....	Pig iron.....	Northern district, U. S.
1934	80	do.....	Pig iron.....	Northern district, U. S.
1935	84	do.....	Pig iron.....	Northern district, U. S.
1936	95	do.....	Pig iron.....	Southern district, U. S.
1937	101	do.....	Pig iron.....	Southern district, U. S.
1938	103	do.....	Pig iron.....	Southern district, U. S.
1939	100	do.....	Pig iron.....	Southern district, U. S.
1940	114	do.....	Pig iron.....	Southern district, U. S.
1941	40	do.....	Pig iron.....	Continent of Europe.....
1942		do.....	Pig iron.....	Continent of Europe.....
1943	36	do.....	Pig iron.....	Great Britain.....
1944	37	do.....	Pig iron.....	Great Britain.....
1945		do.....	Pig iron.....	Great Britain.....
1946		do.....	Steel ingots.....	Continent of Europe.....
1947		do.....	Mixed iron and steel.....	Continent of Europe.....
1948	114	Keepers and keepers' helpers.....	Pig iron.....	Southern district, U. S.
1949	9	Keepers and laborers.....	Pig iron.....	Northern district, U. S.
1950	10	do.....	Pig iron.....	Northern district, U. S.
1951		Keeper's apprentice.....	Steel ingots.....	Continent of Europe.....
1952	10	Keeper's helpers.....	Pig iron.....	Northern district, U. S.
1953	22	do.....	Pig iron.....	Northern district, U. S.
1954	68	do.....	Pig iron.....	Northern district, U. S.
1955	68	do.....	Pig iron.....	Northern district, U. S.
1956	84	do.....	Pig iron.....	Northern district, U. S.
1957	93	do.....	Pig iron.....	Southern district, U. S.
1958	101	do.....	Pig iron.....	Southern district, U. S.
1959	114	do.....	Pig iron.....	Southern district, U. S.
1960	40	do.....	Pig iron.....	Continent of Europe.....
1961		do.....	Pig iron.....	Continent of Europe.....
1962		do.....	Pig iron.....	Great Britain.....
1963		do.....	Steel ingots.....	Continent of Europe.....
1964	10	Keeper's helpers and laborers.....	Pig iron.....	Southern district, U. S.
1965	32	do.....	Pig iron.....	Northern district, U. S.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless Table I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per em- ploye.
			Total	Average.	Total	Average.			
184	(a)	3	(a)	(a)	880	846	(a)	(a)	1838
230	\$1.01	1	186	185	742	742	9022	9022	1839
77	.88	1	320	84	219	44	4.18	53	1840
27	.68	2	51	28	46	23	1.89	24	1841
236	3.73	1	218	218	814	814	0.95	859	1842
285	1.40	1	286	286	490	490	9.78	510	1843
80	.87	4	840	210	324	131	5.45	86	1844
230	1.75	1	107	107	187	187	0.47	401	1845
77	.68	2	119	60	78	39	1.55	56	1846
76	.58	27	1,462	54	853	32	14.74	46	1847
230	2.00	1	113	113	225	225	0.40	561	1848
135	1.91	1	72	72	136	136	0.46	297	1849
185	1.80	1	105	105	175	175	0.68	258	1850
91	.60	1	102	102	62	62	1.12	55	1851
313	.44	15	1,819	121	837	56	5.8	144	1852
513	.84	5	1,124	225	911	122	3.4	170	1853
79	.87	3	73	73	196	65	3.45	49	1854
48	(a)	7	(a)	(a)	217	31	(a)	(a)	1855
184	1.10	11	728	68	803	73	0.90	263	1856
246	.50	3	111	54	56	26	0.30	186	1857
233	.49	1	244	244	120	120	1.04	116	1858
313	1.38	1	808	808	418	418	0.84	423	1859
135	1.21	4	468	123	688	147	2.60	164	1860
108	1.30	1	102	102	131	131	0.94	139	1861
313	.70	2	382	382	443	222	2.02	219	1862
313	.82	1	378	378	236	236	1.21	193	1863
268	2.20	2	162	81	326	263	0.44	1,185	1864
265	2.18	3	564	202	1,220	610	1.50	763	1865
265	1.80	3	605	202	1,324	664	1.90	667	1866
268	2.25	2	656	328	1,483	748	1.82	819	1867
187	1.85	2	328	164	1,604	802	1.96	802	1868
265	1.85	2	680	340	1,260	634	1.84	637	1869
265	1.80	2	518	259	923	466	1.80	466	1870
181	2.20	2	905	452	700	350	2.00	350	1871
265	2.04	3	1,241	414	2,806	935	2.67	1,036	1872
265	2.10	4	796	285	1,573	656	2.14	767	1873
92	1.80	2	166	83	1,304	152	1.74	175	1874
132	1.45	2	231	116	235	118	1.19	177	1875
134	1.72	2	580	290	1,011	506	1.74	588	1876
184	2.00	5	714	143	1,425	285	1.88	367	1877
265	1.85	3	704	235	1,276	423	1.28	462	1878
265	2.00	3	630	210	1,359	453	1.36	462	1879
265	1.80	1	127	127	181	181	0.86	209	1880
90	1.07	2	180	90	193	97	2.00	97	1881
91	1.26	3	171	57	223	74	2.28	77	1882
91	1.18	4	301	75	256	64	2.30	106	1883
91	1.01	7	548	81	877	125	0.24	92	1884
135	1.54	6	510	138	1,248	208	0.90	206	1885
78	.84	10	724	73	620	62	0.41	52	1886
92	.56	18	1,376	88	772	49	0.40	52	1887
266	1.31	2	336	168	443	223	0.93	481	1888
265	2.70	1	248	248	871	871	0.68	946	1889
266	1.72	1	25	25	43	43	0.07	628	1890
78	.20	1	14	14	4	4	0.18	22	1891
265	1.70	0	2,600	290	4,808	511	7.14	511	1892
265	1.57	14	2,047	216	4,780	242	8.35	573	1893
181	1.81	9	1,178	131	2,133	237	0.50	379	1894
265	1.78	20	5,498	273	9,751	488	14.92	631	1895
123	1.25	4	111	111	611	143	2.78	153	1896
234	1.40	15	1,324	88	1,800	125	3.99	468	1897
184	1.42	20	2,122	71	2,015	101	11.43	261	1898
265	1.15	2	378	189	437	214	1.04	412	1899
90	.74	2	171	86	126	63	1.90	66	1900
91	.81	18	787	79	637	64	0.88	74	1901
135	.83	8	810	101	733	128	0.90	126	1902
78	.48	1	29	29	14	14	0.37	28	1903
265	1.50	1	58	58	57	57	0.16	548	1904
265	1.39	1	13	13	18	18	0.04	505	1905

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the data for the periods are of equal length. The establishment numbers relate to the cost of production presented in the establishment was obtained. In referring from this table to those on production by means of

Mar- tin- al num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1906	86	Keeper's helpers and laborers—const'd	Pig iron	Northern district, U. S.
1907	86	do	Pig iron	Northern district, U. S.
1908	101	do	Pig iron	Southern district, U. S.
1909	86	Keeper's helper and metal carrier	Pig iron	Northern district, U. S.
1910	86	Keeper's helper and scraper	Pig iron	Northern district, U. S.
1911	10	Keeper's helper and stock preparator	Pig iron	Northern district, U. S.
1912		Keepers-up	Mixed iron and steel	Continent of Europe
1913		Keepers-up and lighter-up	Mixed iron and steel	United States
1914		Kiln men	Pig iron	Great Britain
1915	101	Laboratory boy	Pig iron	Southern district, U. S.
1916	8	Laborers	Pig iron	Northern district, U. S.
1917	10	do	Pig iron	Northern district, U. S.
1918	22	do	Pig iron	Northern district, U. S.
1919	22	do	Pig iron	Northern district, U. S.
1920	41	do	Pig iron	Northern district, U. S.
1921	43	do	Pig iron	Northern district, U. S.
1922	46	do	Pig iron	Southern district, U. S.
1923	85	do	Pig iron	Northern district, U. S.
1924	86	do	Pig iron	Northern district, U. S.
1925		do	Pig iron	Northern district, U. S.
1926		do	Pig iron	Northern district, U. S.
1927	84	do	Pig iron	Northern district, U. S.
1928	95	do	Pig iron	Southern district, U. S.
1929	101	do	Pig iron	Northern district, U. S.
1930	103	do	Pig iron	Southern district, U. S.
1931	109	do	Pig iron	Southern district, U. S.
1932	114	do	Pig iron	Southern district, U. S.
1933	46	do	Pig iron	Continent of Europe
1934		do	Pig iron	Continent of Europe
1935	86	do	Pig iron	Great Britain
1936	87	do	Pig iron	Great Britain
1937	7	do	Muck bar iron	United States
1938		do	Muck bar iron	United States
1939	17	do	Muck bar iron	United States
1940	26	do	Muck bar iron	United States
1941		do	Finished bar iron	United States
1942	8	do	Finished bar iron	United States
1943	29	do	Finished bar iron	Great Britain
1944	1	do	Steel ingots	United States
1945	2	do	Steel ingots	United States
1946	6	do	Steel ingots	United States
1947	7	do	Steel ingots	United States
1948		do	Steel ingots	Continent of Europe
1949		do	Steel ingots	Continent of Europe
1950		do	Steel ingots	Continent of Europe
1951		do	Steel blooms	United States
1952		do	Steel blooms	United States
1953		do	Steel blooms	United States
1954		do	Steel rails	Continent of Europe
1955		do	Mixed iron and steel	United States
1956		do	Mixed iron and steel	United States
1957		do	Mixed iron and steel	United States
1958		do	Mixed iron and steel	United States
1959		do	Mixed iron and steel	United States
1960		do	Mixed iron and steel	United States
1961		do	Mixed iron and steel	United States
1962		do	Mixed iron and steel	United States
1963		do	Mixed iron and steel	United States
1964		do	Mixed iron and steel	Continent of Europe
1965		do	Mixed iron and steel	Continent of Europe
1966		do	Mixed iron and steel	Continent of Europe
1967		do	Mixed iron and steel	Continent of Europe
1968		do	Mixed iron and steel	Great Britain
1969		do	Mixed iron and steel	Great Britain
1970		do	Mixed iron and steel	Great Britain
1971	14	do	Miscellaneous coal	United States
1972	26	do	Miscellaneous coal	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless, Tables I to XL. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.)

Work ing days in the period.	Actual daily earnings, or daily rate near est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- ginal num- ber.	
		Different employers.	Days of work done.		Earnings.		Necessary employees.		Consequent average earnings per em- ployee.
			Total.	Average.	Total.	Average.			
181	\$1.50	3	183	193	\$229	\$229	0.84	\$273	1906
183	1.00	1	119	119	201	201	0.23	817	1907
184	1.00	1	2	2	2	2	0.01	184	1908
181	2.30	1	18	18	43	43	0.10	423	1909
181	1.40	1	172	172	276	276	0.95	280	1910
185	1.50	1	251	251	392	392	0.60	570	1911
92	.48	12	84	7	41	3	0.91	89	1912
113	2.11	1	312	312	662	662	1.00	662	1913
135	.77	1	144	144	111	111	1.07	104	1914
181	1.00	1	118	118	113	113	0.94	178	1915
185	1.40	84	2,515	30	2,580	42	7.01	813	1916
113	1.25	100	2,003	51	4,303	64	16.17	886	1917
185	1.41	62	2,408	66	4,207	79	8.20	816	1918
113	1.11	182	7,046	37	9,042	62	22.51	442	1919
143	1.20	44	3,287	77	4,002	98	22.68	172	1920
113	1.25	40	0,317	190	11,512	235	20.77	207	1921
113	1.29	30	4,003	132	5,195	172	12.79	406	1922
153	1.33	53	2,641	34	2,794	72	18.2	207	1923
113	1.42	300	17,137	57	24,360	81	54.76	446	1924
113	1.25	48	4,800	103	4,264	133	15.73	494	1925
79	1.20	12	4,461	39	5,57	66	8.87	85	1926
122	1.00	34	2,030	60	2,073	61	16.61	125	1927
134	1.07	37	835	23	921	25	2.37	200	1928
184	1.00	118	1,505	13	1,345	19	8.18	146	1929
185	.90	250	7,564	30	7,291	28	20.72	282	1930
113	1.02	233	10,200	44	10,460	46	32.47	324	1931
114	.60	63	4,085	64	2,603	63	12.70	310	1932
90	.64	3	116	39	74	25	1.29	57	1933
91	.69	6	440	75	221	87	4.93	45	1934
91	.60	21	1,600	71	746	36	16.40	45	1935
91	.52	107	8,370	78	4,840	41	92.06	47	1936
155	1.26	43	458	11	574	19	2.66	190	1937
113	1.21	72	5,737	80	6,070	87	18.23	281	1938
113	1.20	5	200	40	242	46	0.64	379	1939
113	1.25	34	924	27	1,257	37	2.96	434	1940
208	1.26	21	4,223	206	5,448	250	14.43	377	1941
113	1.20	85	1,870	86	2,421	89	6.14	285	1942
108	.74	4	462	121	2,300	90	4.16	40	1943
113	1.29	180	4,129	22	2,338	29	12.16	406	1944
144	1.54	75	4,290	57	6,010	88	29.80	223	1945
132	1.28	6	92	18	110	23	0.70	1946	1946
251	1.50	44	887	16	1,045	24	2.78	376	1947
77	.61	9	650	72	305	44	4.44	47	1948
27	.67	40	618	15	415	10	22.80	18	1949
78	.60	39	1,030	43	848	22	21.71	39	1950
202	1.25	44	2,742	62	2,444	70	12.57	254	1951
144	1.04	60	8,623	64	5,882	88	28.66	222	1952
251	1.43	111	7,072	64	10,166	88	29.17	361	1953
78	.58	25	318	12	168	7	4.00	41	1954
113	(a)	230	(a)	(a)	12,705	49	(a)	(a)	1955
113	(a)	206	(a)	(a)	22,440	79	(a)	(a)	1956
113	.84	118	12,048	111	12,312	184	41.00	295	1957
113	1.31	679	46,040	69	60,653	89	147.11	413	1958
113	1.36	172	14,577	85	18,914	116	46.57	428	1959
168	1.41	75	3,240	45	4,741	63	18.52	228	1960
185	1.28	119	2,632	22	2,312	28	16.98	185	1961
113	(a)	(b)	(a)	(a)	36,419	100	(a)	(a)	1962
113	1.31	187	11,812	73	15,756	100	87.74	418	1963
77	.61	80	492	70	300	42	6.29	47	1964
113	.21	80	11,020	138	3,400	43	36.22	86	1965
92	.43	51	2,272	45	970	19	24.68	46	1966
113	.38	62	12,088	209	4,633	75	41.60	112	1967
48	.30	114	2,428	30	1,725	16	71.63	24	1968
136	.65	6	867	146	758	126	5.40	123	1969
53	.52	80	2,143	29	1,653	31	60.20	28	1970
158	1.50	2	287	144	471	216	1.73	217	1971
158	1.17	8	158	39	183	46	0.60	367	1972

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
b Number of employees not given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
1873	25	Laborers—caminados	Bituminous coal	United States
1874	167	do	Bituminous coal	United States
1875	108	do	Bituminous coal	United States
1876	do	do	Bituminous coal	United States
1877	do	do	Bituminous coal	United States
1878	do	do	Bituminous coal	United States
1879	do	do	Bituminous coal	United States
1880	154	do	Bituminous coal	Continent of Europe
1881	do	do	Bituminous coal	Continent of Europe
1882	176	do	Bituminous coal	Great Britain
1883	9	do	Coke	United States
1884	13	do	Coke	United States
1885	22	do	Coke	United States
1886	22	do	Coke	United States
1887	22	do	Coke	United States
1888	do	do	Coke	Continent of Europe
1889	1	do	Iron ore	United States
1890	32	do	Iron ore	United States
1891	45	do	Iron ore	United States
1892	48	do	Iron ore	United States
1893	81	do	Iron ore	United States
1894	61	do	Iron ore	United States
1895	73	do	Iron ore	United States
1896	77	do	Iron ore	Continent of Europe
1897	80	do	Iron ore	Continent of Europe
1898	do	Laborers, boiler	Steel blooms	United States
1899	49	Laborers (boys)	Pig iron	Continent of Europe
1900	do	do	Mixed iron and steel	United States
1901	do	do	Mixed iron and steel	United States
1902	do	Laborers, converter	Steel ingots	Continent of Europe
1903	53	Laborers, furnace	Pig iron	Northern district, U. S.
1904	do	do	Pig iron	Great Britain
1905	do	Laborers, general	Pig iron	Great Britain
1906	42	Laborer, machine shop	Iron ore	United States
1907	do	Laborers, railroad	Steel blooms	United States
1908	96	Laborers, surface	Bituminous coal	United States
1909	148	do	Bituminous coal	Dominion of Canada
1910	12	do	Iron ore	United States
1911	6	Laborer, track	Coke	United States
1912	96	Laborers, underground	Bituminous coal	United States
1913	148	do	Bituminous coal	Dominion of Canada
1914	12	do	Iron ore	United States
1915	101	Laborers, yard	Pig iron	Southern district, U. S.
1916	2	Laborer and ladle man	Steel ingots	United States
1917	1	Laborers and ladle men	Steel ingots	United States
1918	1	Laborers and lifters	Steel ingots	United States
1919	26	Laborer and loader	Bituminous coal	United States
1920	10	Laborer and machinist	Pig iron	Northern district, U. S.
1921	42	Laborer and machinists' helper	Pig iron	Northern district, U. S.
1922	do	Laborers and masons	Mixed iron and steel	United States
1923	do	do	Coke	Continent of Europe
1924	72	do	Iron ore	United States
1925	do	Laborer and masons' helper	Mixed iron and steel	United States
1926	9	Laborers and metal breakers	Pig iron	Northern district, U. S.
1927	7	do	Steel ingots	United States
1928	do	do	Steel blooms	United States
1929	9	Laborers and metal carriers	Pig iron	Northern district, U. S.
1930	58	do	Pig iron	Northern district, U. S.
1931	2	Laborers and metal wheelers	Steel ingots	United States
1932	7	do	Steel ingots	United States
1933	96	Laborers and miners	Bituminous coal	United States
1934	109	do	Bituminous coal	United States
1935	do	do	Bituminous coal	United States
1936	42	do	Iron ore	United States
1937	72	do	Iron ore	United States
1938	148	Laborers and miners' helpers	Bituminous coal	Dominion of Canada
1939	72	do	Iron ore	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless then, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Man- ual num- ber.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per em- ploye.
			Total	Average.	Total	Average.			
218	\$1.50	2	15	5	823	98	0.68	9480	
212	1.43	12	358	30	515	43	1.14	648	
212	(a)	48	(a)	(a)	1,623	34	(a)	(a)	
212	1.20	1	10	10	12	12	0.68	467	
212	1.33	17	228	20	453	27	1.08	419	
212	1.73	41	1,616	40	2,632	60	5.28	539	
212	(a)	288	(a)	(a)	17,098	50	(a)	(a)	
77	.90	5	10	2	6	1	0.12	66	
62	.51	4	61	31	81	16	1.17	26	
81	.64	7	841	77	465	65	5.93	77	
92	.07	86	1,403	16	1,269	16	18.29	89	
212	1.31	47	5,305	113	7,061	158	17.24	418	
212	1.08	42	1,838	46	1,041	46	6.19	313	
212	1.23	38	1,005	26	1,080	34	5.13	388	
285	1.10	10	572	57	629	63	1.57	461	
365	.32	7	543	76	170	34	1.46	117	
212	1.23	124	3,804	25	4,063	30	10.87	387	
212	1.66	2	96	33	156	33	0.31	519	
212	1.15	133	11,086	83	12,906	97	35.35	366	
212	1.06	21	2,112	66	2,077	87	6.75	308	
212	1.00	62	4,583	73	4,523	73	14.54	311	
195	1.00	1	2	2	2	2	0.01	163	
212	1.63	194	8,137	42	18,486	89	26.98	517	
212	.50	5	170	34	80	19	0.84	173	
158	.80	3	517	172	313	104	3.27	96	
220	1.65	98	2,855	29	4,128	111	11.86	358	
90	.25	3	143	72	51	25	1.58	23	
212	.84	130	7,602	58	8,392	48	24.29	253	
212	.45	8	904	26	274	34	1.63	142	
27	.68	2	121	20	84	14	4.48	19	
79	1.12	2	168	78	176	85	1.87	10	
125	.77	10	1,291	129	897	109	9.56	184	
136	.78	6	721	120	564	94	5.34	198	
212	1.25	1	206	296	380	398	6.95	422	
144	1.40	7	567	85	833	119	4.15	221	
212	1.26	8	133	17	153	22	0.43	484	
212	.80	24	2,483	145	3,169	133	11.12	284	
212	1.62	28	3,046	111	5,065	180	8.98	506	
72	1.00	1	94	84	84	94	1.02	92	
212	1.91	13	107	9	295	17	0.34	690	
212	1.13	29	4,711	162	5,380	184	13.08	355	
212	1.70	83	7,008	84	11,845	144	22.88	534	
184	1.18	53	1,164	25	1,381	39	6.00	208	
144	1.87	1	110	110	217	317	0.76	284	
212	1.74	2	60	25	87	46	0.18	545	
212	1.38	2	338	169	471	236	1.68	436	
212	1.63	1	131	131	212	212	0.43	607	
212	1.40	1	10	10	14	14	1.16	428	
285	1.41	1	348	348	480	480	1.16	428	
212	1.51	1	13	13	20	20	0.04	2021	
285	.08	1	3	3	2	2	0.01	2022	
212	2.53	1	79	79	290	300	0.23	243	
212	1.39	1	314	314	438	438	1.00	798	
285	1.71	10	1,472	147	2,594	252	4.03	487	
251	1.66	1	0	0	15	15	0.04	608	
251	1.58	2	211	70	533	111	0.84	418	
285	2.08	2	981	123	2,030	235	2.69	326	
212	1.70	2	17	9	20	15	0.05	758	
144	1.84	2	94	47	173	87	0.08	834	
251	2.07	2	184	92	547	274	0.78	386	
212	(a)	(a)	(a)	(a)	83	83	(a)	(a)	
212	(a)	(a)	(a)	(a)	1,340	225	(a)	(a)	
285	(a)	12	(a)	(a)	2,594	218	(a)	(a)	
212	(a)	63	(a)	(a)	8,238	181	(a)	(a)	
212	1.28	34	6,404	223	8,480	249	25.03	383	
212	1.70	10	843	84	1,508	151	3.69	388	
212	1.60	2	190	95	104	104	0.41	243	
212	1.63	3	208	154	381	381	0.86	610	

* Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a few occupations the facts for the periods are of equal length. The establishment numbers relate to the cost of production program for the establishment was obtained. In referring from this table to those on production by means of

Man- fact- ure num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
2041	7	Laborers and mould coppers.....	Steel ingots.....	United States.....
2042		Laborer and moulder.....	Mixed iron and steel.....	United States.....
2043	1	Laborer and moulder.....	Steel ingots.....	United States.....
2044	1	Laborers and rollers.....	Steel ingots.....	United States.....
2045	9	Laborers and ore breakers.....	Pig iron.....	Northern district, U. S..
2046	20	Laborers and ore crushers.....	Black bar iron.....	United States.....
2047		do.....	Mixed iron and steel.....	United States.....
2048	9	Laborer and ore piler.....	Pig iron.....	Northern district, U. S..
2049		Laborer and piler.....	Mixed iron and steel.....	United States.....
2050		Laborer and pipe fitter.....	Mixed iron and steel.....	United States.....
2051	1	Laborers and pit cleaners.....	Steel ingots.....	United States.....
2052	7	do.....	Steel ingots.....	United States.....
2053	8	Laborer and pitman's helper.....	Steel ingots.....	United States.....
2054		Laborers and platemen.....	Mixed iron and steel.....	United States.....
2055		Laborer and pressman.....	Steel blooms.....	United States.....
2056		Laborers and paddlers.....	Mixed iron and steel.....	United States.....
2057		do.....	Mixed iron and steel.....	Continents of Europe.....
2058		Laborers and puddlers' helpers.....	Mixed iron and steel.....	United States.....
2059		do.....	Mixed iron and steel.....	United States.....
2060		Laborers and punchers.....	Mixed iron and steel.....	United States.....
2061	7	Laborer and pusher.....	Steel ingots.....	United States.....
2062		Laborer and rail breaker.....	Mixed iron and steel.....	Great Britain.....
2063	7	Laborer and regulator.....	Steel ingots.....	United States.....
2064		Laborer and reverser.....	Mixed iron and steel.....	United States.....
2065		Laborers and rollers.....	Mixed iron and steel.....	United States.....
2066		Laborer and rougher.....	Mixed iron and steel.....	United States.....
2067		Laborer and rougher-down.....	Mixed iron and steel.....	United States.....
2068	32	Laborers and runners.....	Pig iron.....	Northern district, U. S..
2069	1	do.....	Steel ingots.....	United States.....
2070	22	Laborer and scaleman.....	Pig iron.....	Northern district, U. S..
2071		Laborers and scrap piler.....	Mixed iron and steel.....	United States.....
2072		Laborer and scrap winder.....	Steel blooms.....	United States.....
2073	55	Laborers and scrapers.....	Pig iron.....	Northern district, U. S..
2074	16	Laborers and scrapman.....	Pig iron.....	Northern district, U. S..
2075	1	do.....	Steel ingots.....	United States.....
2076		Laborers and shearmen.....	Mixed iron and steel.....	United States.....
2077		do.....	Mixed iron and steel.....	United States.....
2078	41	Laborers and slagmen.....	Pig iron.....	Northern district, U. S..
2079	103	do.....	Pig iron.....	Southern district, U. S..
2080	41	Laborers and stock breakers.....	Pig iron.....	Northern district, U. S..
2081	43	do.....	Pig iron.....	Northern district, U. S..
2082	1	Laborers and stockers.....	Steel ingots.....	United States.....
2083		do.....	Mixed iron and steel.....	United States.....
2084		do.....	Mixed iron and steel.....	United States.....
2085	58	Laborers and stockhouse men.....	Pig iron.....	Northern district, U. S..
2086	10	Laborers and stock preparers.....	Pig iron.....	Northern district, U. S..
2087	9	Laborer and stove cleaner.....	Pig iron.....	Northern district, U. S..
2088	9	Laborer and stove tender.....	Pig iron.....	Northern district, U. S..
2089	98	Laborer and stoveman.....	Pig iron.....	Southern district, U. S..
2090		Laborers and straighteners.....	Mixed iron and steel.....	United States.....
2091		do.....	Mixed iron and steel.....	United States.....
2092		do.....	Mixed iron and steel.....	United States.....
2093		do.....	Mixed iron and steel.....	United States.....
2094		Laborer and switchman.....	Mixed iron and steel.....	United States.....
2095		Laborer and telegraphman.....	Mixed iron and steel.....	United States.....
2096		Laborers and timbermen.....	Bituminous coal.....	United States.....
2097	1	do.....	Iron ore.....	United States.....
2098	51	do.....	Iron ore.....	United States.....
2099		Laborer and tram car repairer.....	Bituminous coal.....	United States.....
2100		Laborer and tram-road repairer.....	Bituminous coal.....	United States.....
2101		Laborers and trammers.....	Bituminous coal.....	United States.....
2102	1	do.....	Iron ore.....	United States.....
2103	72	do.....	Iron ore.....	United States.....
2104	33	Laborers and trappers.....	Bituminous coal.....	United States.....
2105	109	do.....	Bituminous coal.....	United States.....
2106	1	Laborers and unloaders.....	Steel ingots.....	United States.....
2107	2	Laborers and vessel cinders.....	Steel ingots.....	United States.....
2108	3	Laborer and vessel tender.....	Steel ingots.....	United States.....

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless, too, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.)

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Man- ual num- ber.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per em- ploye.
			Total.	Average.	Total.	Average.			
251	\$2.31½	2	95	48	\$320	\$110	0.38	\$581	2041
155	1.46	1	59	39	86	38	0.38	226	2042
218	1.87½	1	34	34	57	57	0.11	325	2043
212	1.42	2	228	114	326	163	0.73	444	2044
285	1.87½	12	615	51	81	81	1.68	573	2045
212	1.30½	1	234	234	227	227	0.75	497	2046
160	1.47½	1	143	143	211	211	0.55	248	2047
208	1.50	1	16	16	24	24	0.04	548	2048
212	1.53½	1	41	41	63	63	0.13	481	2049
158	1.52	1	50	50	78	78	0.22	236	2050
212	1.36½	1	14	14	19	19	0.04	425	2051
251	1.58	1	44	44	73	73	0.19	382	2052
132	1.43	2	14	14	20	20	0.11	199	2053
212	1.45½	1	87	87	110	110	0.31	445	2054
251	1.58½	1	120	120	190	190	0.48	367	2055
212	(a)	2	(a)	(a)	59	30	(a)	(a)	2056
212	(a)	1	284	284	132	132	0.91	145	2057
212	(a)	2	(a)	(a)	115	38	(a)	(a)	2058
212	1.87½	2	147	49	220	80	0.47	500	2059
212	1.86½	2	268	132	564	282	0.85	563	2060
251	2.00	1	6	6	12	12	0.02	602	2061
48	(a)	1	(a)	(a)	21	21	(a)	(a)	2062
251	1.50	1	16	16	24	24	0.06	377	2063
212	1.60	1	227	227	362	362	0.72	499	2064
212	2.24	2	22	17	74	37	0.11	702	2065
212	(a)	1	(a)	(a)	49	49	(a)	(a)	2066
155	2.22½	1	17	17	28	28	0.11	346	2067
205	1.42	2	234	112	321	160	0.61	520	2068
212	1.89	2	19	7	22	11	0.04	680	2069
265	1.50½	1	164	164	247	247	0.45	580	2070
160	(a)	6	(a)	(a)	1,478	246	(a)	(a)	2071
144	1.68½	1	61	61	86	86	0.25	248	2072
181	1.44½	2	218	72	216	108	1.20	262	2073
265	1.57	2	218	79	406	124	0.87	573	2074
212	1.96	10	222	22	543	54	0.90	604	2075
212	1.18	1	244	244	259	259	0.78	360	2076
212	1.48½	2	292	146	370	285	1.25	455	2077
167	1.35	1	124	124	181	181	0.80	214	2078
265	1.14	1	85	85	97	97	0.22	417	2079
167	1.20	1	181	151	196	196	0.90	217	2080
285	1.22	1	239	239	447	447	0.93	481	2081
212	1.53½	2	67	22	109	34	0.21	481	2082
212	1.45½	2	129	64	196	98	0.41	455	2083
155	1.22	1	32	32	41	41	0.21	199	2084
265	1.48½	6	967	161	1,481	244	2.73	535	2085
265	1.38	21	1,317	42	1,820	56	2.91	504	2086
265	1.45	1	20	20	31	31	0.05	546	2087
265	2.11½	1	234	234	625	625	0.89	772	2088
234	1.21½	1	22	22	28	28	0.07	467	2089
212	1.68	1	187	187	314	314	0.60	826	2090
212	1.67½	2	685	322	1,147	282	2.19	524	2091
155	1.97½	1	39	39	77	77	0.25	386	2092
212	1.13	1	31	31	25	25	0.10	353	2093
212	1.77	1	306	306	542	542	0.88	454	2094
212	1.65½	1	220	220	342	342	0.70	467	2095
212	(a)	1	(a)	(a)	214	214	(a)	(a)	2096
212	1.33½	2	318	159	422	311	1.01	418	2097
212	1.19	1	16	16	19	19	0.05	372	2098
212	1.24	1	75	75	101	101	0.24	422	2099
212	(a)	1	(a)	(a)	42	42	(a)	(a)	2100
212	1.60½	1	21	21	25	25	0.07	522	2101
212	1.40	1	10	10	14	14	0.03	439	2102
212	1.94½	2	167	79	305	153	0.50	313	2103
212	2.00	1	88	88	68	68	0.22	313	2104
212	1.82½	2	222	111	184	92	0.71	268	2105
212	1.48½	11	342	32	642	49	1.18	460	2106
144	2.09½	2	319	110	450	225	1.32	302	2107
212	1.45½	1	209	209	304	304	0.87	465	2108

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XXX.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production previously for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
2100	20	Laborers and watchmen	Muck bar iron	United States
2110	75	do	Iron ore	United States
2111	8	Laborers and water tenders	Pig iron	Northern district, U. S.
2112	100	do	Pig iron	Southern district, U. S.
2113		do	Steel blooms	United States
2114		do	Mixed iron and steel	United States
2115	19	Laborers and weighmen	Pig iron	Northern district, U. S.
2116	2	do	Steel ingots	United States
2117		do	Mixed iron and steel	United States
2118		do	Mixed iron and steel	Great Britain
2119	7	Ladle cleaners	Steel ingots	United States
2120		do	Steel ingots	Continent of Europe
2121		do	Steel ingots	Continent of Europe
2122		Ladle handlers	Mixed iron and steel	Great Britain
2123	2	Ladle liners	Steel ingots	United States
2124	7	do	Steel ingots	United States
2125	7	Ladle liner and ladle packer	Steel ingots	United States
2126	2	Ladle liners and pushers	Steel ingots	United States
2127	2	Ladle liners and vessel cleaners	Steel ingots	United States
2128	2	Ladle liner and vessel repairer	Steel ingots	United States
2129	7	Ladle liner and vesselman	Steel ingots	United States
2130	7	Ladle liners' helpers	Steel ingots	United States
2131	7	Ladle racker	Steel ingots	United States
2132	1	Ladle stoppers	Steel ingots	United States
2133		do	Steel ingots	Continent of Europe
2134	57	Ladlemen	Pig iron	Great Britain
2135	1	do	Steel ingots	United States
2136	8	do	Steel ingots	United States
2137		do	Steel ingots	Continent of Europe
2138		do	Steel ingots	Continent of Europe
2139		do	Steel ingots	Continent of Europe
2140		do	Mixed iron and steel	United States
2141	1	Ladleman and moldman	Steel ingots	United States
2142	1	Ladleman and pit leader	Steel ingots	United States
2143	1	Ladleman and runner	Steel ingots	United States
2144	1	Ladleman and scrap cleaners	Steel ingots	United States
2145	6	Ladleman's helpers	Steel ingots	United States
2146	6	Ladleman's helper and pitman's helper	Steel ingots	United States
2147		Lampmen	Pig iron	Great Britain
2148	100	do	Bituminous coal	Dominion of Canada
2149	170	do	Bituminous coal	Great Britain
2150	50	Landers	Iron ore	United States
2151	50	do	Iron ore	United States
2152	61	do	Iron ore	United States
2153	72	do	Iron ore	United States
2154	56	Lander and miner	Iron ore	United States
2155		Lathemen	Mixed iron and steel	United States
2156		do	Mixed iron and steel	Great Britain
2157		Lay-overs	Mixed iron and steel	United States
2158		Lay-over and puncher	Mixed iron and steel	United States
2159	12	Levellers	Coke	United States
2160	19	do	Coke	United States
2161	28	do	Coke	United States
2162		do	Coke	Continent of Europe
2163		Lever boys	Mixed iron and steel	United States
2164		Lever men	Mixed iron and steel	United States
2165		do	Mixed iron and steel	Continent of Europe
2166	20	Liftmen	Pig iron	Great Britain
2167	1	do	Steel ingots	United States
2168		Lighter-up	Steel ingots	United States
2169	50	Lighthouse	Pig iron	Northern district, U. S.
2170		Lime wheelers	Mixed iron and steel	Continent of Europe
2171	22	Limestone breakers	Pig iron	Northern district, U. S.
2172		do	Pig iron	Continent of Europe
2173		do	Pig iron	Great Britain
2174		do	Steel ingots	United States
2175	7	Limestone wheelers	Steel ingots	Continent of Europe
2176		Lubricator	Steel ingots	Continent of Europe

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XL. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.					Condition if workmen had continuous employment.		Marginal number.
		Different employes.	Days of work done.		Earnings.		Necessary employes.	Consequent average earnings per employe.	
			Total.	Average.	Total.	Average.			
312	\$1.75	1	37	37	865	865	0.12	\$560	2100
365	1.69	1	267	267	452	452	0.72	618	2110
365	1.87	1	298	298	558	558	0.82	668	2111
365	1.25	1	75	75	94	94	0.21	457	2112
261	1.83	1	48	48	88	88	0.19	460	2113
312	1.90	1	27	27	43	43	0.09	496	2114
365	1.87	1	16	16	22	22	0.04	502	2115
144	1.61	1	116	116	187	187	0.81	232	2116
312	1.67	1	170	170	285	285	0.54	525	2117
48	.51	1	58	58	30	30	1.21	23	2118
230	3.62	2	258	129	928	464	1.11	834	2119
27	.69	4	91	23	63	16	3.37	19	2120
78	.65	4	247	62	161	40	3.17	51	2121
53	(a)	4	(a)	(a)	204	51	(a)	(a)	2122
132	2.56	13	914	70	2,322	179	6.93	337	2123
230	4.52	1	188	188	850	850	0.82	1,040	2124
230	3.02	1	135	135	417	417	0.60	695	2125
132	2.00	2	157	79	316	158	1.19	266	2126
132	2.24	3	87	19	83	42	0.28	296	2127
132	1.39	1	28	28	39	39	0.21	184	2128
230	6.07	1	168	168	1,070	1,070	0.72	1,396	2129
230	3.69	2	371	186	1,370	685	1.61	849	2130
230	1.70	1	189	189	321	321	0.82	391	2131
318	3.70	4	179	45	662	166	0.57	1,156	2132
27	.89	2	43	24	43	22	1.78	24	2133
91	.61	1	57	57	35	35	0.63	56	2134
318	2.56	12	1,408	117	3,607	301	4.50	802	2135
132	1.71	2	180	65	223	112	0.98	228	2136
77	.79	5	316	63	252	50	4.10	61	2137
27	.86	4	96	24	82	21	2.52	23	2138
78	.61	13	854	66	527	41	10.95	48	2139
312	(a)	7	(a)	(a)	1,709	244	(a)	(a)	2140
312	3.01	1	80	80	209	209	0.26	818	2141
312	1.62	1	119	119	193	193	0.38	506	2142
312	1.06	1	3	3	5	5	0.01	522	2143
312	1.61	2	174	87	281	141	0.56	595	2144
132	1.82	3	167	56	221	74	1.27	175	2145
132	1.64	1	117	117	192	192	0.80	217	2146
135	.76	1	135	135	103	103	1.00	103	2147
312	.99	5	1,395	279	1,390	278	4.45	312	2148
91	.82	4	308	77	272	68	2.39	80	2149
312	1.07	3	80	27	86	29	0.26	236	2150
312	.90	2	451	226	406	203	1.44	262	2151
155	1.00	2	109	55	110	55	0.70	156	2152
312	1.74	18	3,748	208	6,521	362	11.97	545	2153
312	1.06	1	214	214	228	228	0.68	323	2154
312	1.61	2	535	268	864	432	1.71	505	2155
48	.65	4	186	47	103	26	2.88	27	2156
155	1.38	5	221	44	305	61	1.43	214	2157
155	.84	1	38	38	32	32	0.25	131	2158
312	2.27	10	1,775	178	4,042	404	5.67	713	2159
312	2.30	5	1,313	263	3,026	605	4.19	721	2160
312	1.65	2	207	104	340	170	0.66	514	2161
365	1.37	1	304	304	417	417	0.83	501	2162
312	1.50	2	562	281	800	400	1.80	446	2163
202	2.30	5	463	93	1,066	213	2.29	466	2164
312	(a)	6	(a)	(a)	6,202	1,044	(a)	(a)	2165
312	.57	8	2,375	297	1,351	169	7.50	178	2166
91	.75	4	320	80	241	60	3.52	69	2167
312	1.35	3	492	164	674	225	1.57	429	2168
202	1.00	1	92	92	92	92	0.46	202	2169
365	2.00	1	316	316	685	685	0.95	723	2170
312	.66	5	1,163	233	642	128	3.71	173	2171
365	1.50	4	751	188	1,121	280	2.06	545	2172
91	.55	5	365	73	200	40	4.01	50	2173
135	.84	4	540	135	452	113	4.00	113	2174
230	1.62	2	191	96	310	155	0.88	373	2175
27	.67	33	472	14	317	10	17.48	18	2176

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- sh- al num- ber.	Es- ta- blish- ment num- ber.	Occupation.	Industry.	Locality.
2177		Lining preparers	Steel ingots	Continent of Europe
2178		Link welders	Mixed iron and steel ..	United States
2179		Loaders	Steel blooms	United States
2180		do	Mixed iron and steel ..	Continent of Europe
2181		do	Mixed iron and steel ..	Continent of Europe
2182		do	Mixed iron and steel ..	Great Britain
2183		do	Mixed iron and steel ..	Great Britain
2184		do	Mixed iron and steel ..	Great Britain
2185	24	do	Bituminous coal	United States
2186	154	do	Bituminous coal	Continent of Europe
2187		do	Bituminous coal	Continent of Europe
2188	4	do	Coke	United States
2189	28	do	Coke	Continent of Europe
2190		do	Coke	United States
2191	12	do	Iron ore	United States
2192	46	do	Iron ore	United States
2193	56	do	Iron ore	United States
2194	25	Loader and teamster	Bituminous coal	United States
2195	24	Loaders and timbermen ..	Bituminous coal	United States
2196	24	Loader and trapper	Bituminous coal	United States
2197	26	Loader and wagonman	Bituminous coal	United States
2198		Loaders and weighmen	Mixed iron and steel ..	Great Britain
2199	7	Loam mixers	Steel ingots	United States
2200		do	Mixed iron and steel ..	Great Britain
2201		Locksmiths	Mixed iron and steel ..	Continent of Europe
2202		do	Mixed iron and steel ..	Continent of Europe
2203	10	Machinists	Pig iron	Northern district, U. S. ..
2204	22	do	Pig iron	Northern district, U. S. ..
2205	42	do	Pig iron	Northern district, U. S. ..
2206	54	do	Pig iron	Northern district, U. S. ..
2207	83	do	Pig iron	Northern district, U. S. ..
2208	101	do	Pig iron	Southern district, U. S. ..
2209	103	do	Pig iron	Southern district, U. S. ..
2210	109	do	Pig iron	Southern district, U. S. ..
2211	7	do	Muck bar iron	United States
2212	9	do	Muck bar iron	United States
2213	28	do	Muck bar iron	United States
2214	8	do	Finished bar iron	United States
2215	1	do	Steel ingots	United States
2216		do	Steel ingots	Continent of Europe
2217		do	Steel ingots	Continent of Europe
2218		do	Steel billets	United States
2219		do	Steel blooms	United States
2220		do	Steel blooms	United States
2221		do	Steel rails	Continent of Europe
2222		do	Steel rails	Continent of Europe
2223		do	Mixed iron and steel ..	United States
2224		do	Mixed iron and steel ..	United States
2225		do	Mixed iron and steel ..	United States
2226		do	Mixed iron and steel ..	United States
2227		do	Mixed iron and steel ..	United States
2228		do	Mixed iron and steel ..	United States
2229		do	Mixed iron and steel ..	United States
2230		do	Mixed iron and steel ..	Continent of Europe
2231		do	Mixed iron and steel ..	Continent of Europe
2232		do	Bituminous coal	United States
2233	140	do	Bituminous coal	Dominion of Canada
2234		do	Bituminous coal	Continent of Europe
2235		do	Coke	Continent of Europe
2236	42	do	Iron ore	United States
2237	72	do	Iron ore	United States
2238	80	do	Iron ore	Continent of Europe
2239		Machinist and puncher	Mixed iron and steel ..	United States
2240		Machinists' apprentices ..	Pig iron	Continent of Europe
2241		do	Steel ingots	Continent of Europe
2242		do	Steel blooms	United States
2243	10	Machinists' helpers	Pig iron	Northern district, U. S. ..

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
27	\$0.02½	3	58	39	937	919	2.19	\$17	2177
108	(a)	6	(a)	(a)	1,933	387	(a)	(a)	2178
220	1.78	8	624	78	1,110	136	2.70	410	2179
92	.45½	66	2,330	56	1,811	22	92.20	43	2180
313	.51½	13	2,779	232	1,434	120	8.88	102	2181
48	(a)	7	(a)	(a)	223	32	(a)	(a)	2182
126	1.18½	6	640	107	769	137	4.10	185	2183
55	(a)	(b)	(a)	(a)	443	(b)	(a)	(a)	2184
313	1.86	67	2,497	37	4,850	88	7.58	573	2185
77	.09½	20	910	46	632	32	11.61	52	2186
62	.57	11	481	44	274	25	9.25	30	2187
93	1.00	1	96	96	96	96	1.64	92	2188
312	1.30	37	737	27	824	32	2.36	278	2189
305	.37	17	2,363	139	978	51	6.47	135	2190
313	1.61	26	414	41	1,473	74	1.60	666	2191
313	1.21½	22	4,743	216	5,761	262	15.16	380	2192
312	.88	7	995	142	856	122	3.16	269	2193
312	1.69	1	78	78	121	121	0.23	526	2194
313	1.96½	4	169	42	323	83	0.54	615	2195
313	1.31½	1	143	143	188	188	0.48	411	2196
313	■	1	26	26	44	44	0.08	530	2197
44	(a)	10	(a)	(a)	402	40	(a)	(a)	2198
280	1.65	1	206	206	236	236	0.90	273	2199
53	(a)	12	(a)	(a)	43	43	(a)	(a)	2200
312	.65½	1	1,972	196	1,261	105	6.14	205	2201
312	.57½	17	5,189	805	2,986	176	16.58	189	2202
313	2.87½	5	892	178	2,116	424	2.64	743	2203
313	2.61	1	296	299	781	781	0.96	816	2204
395	1.91	2	684	843	1,308	654	1.67	606	2205
313	1.69	2	928	309	1,567	522	2.97	522	2206
79	1.65	2	■	73	129	129	0.98	181	2207
184	2.60	5	994	139	1,734	347	2.77	480	2208
395	8.00	1	240	340	1,619	1,619	0.93	1,694	2209
393	2.79½	1	366	366	1,020	1,020	1.00	1,017	2210
150	1.60	1	144	144	216	216	0.93	233	2211
312	2.33	2	158	40	368	93	0.50	729	2212
312	2.26	4	36	12	82	27	0.12	713	2213
312	2.36	4	158	40	368	92	0.50	723	2214
312	2.26	12	642	64	1,453	121	2.03	797	2215
77	.71½	6	448	74	320	59	5.80	65	2216
78	.80	1	81	81	40	40	1.04	39	2217
204	2.26	5	629	210	1,439	472	3.11	456	2218
144	2.40½	5	■	132	1,364	317	4.88	346	2219
251	2.19½	12	1,530	135	3,533	296	6.47	550	2220
77	.97	6	307	81	296	41	■	82	2221
78	.65	16	677	66	372	37	8.67	43	2222
313	2.23	9	908	78	1,556	173	2.23	697	2223
313	2.22	28	4,001	143	8,863	317	12.78	696	2224
312	2.67	13	2,946	294	6,909	534	8.48	803	2225
160	2.45½	7	773	110	1,997	271	4.80	412	2226
156	2.22	13	1,514	116	2,359	258	9.77	344	2227
313	(a)	2	(a)	(a)	701	351	(a)	(a)	2228
313	2.29	10	1,346	135	3,219	322	4.28	749	2229
312	.62	10	2,412	241	1,495	150	7.71	104	2230
79	1.63½	3	311	62	260	52	8.93	68	2231
313	1.86	3	33	11	62	21	0.11	668	2232
312	1.74	2	663	327	1,137	569	2.99	545	2233
82	.61½	1	33	52	42	42	1.00	42	2234
364	1.00	1	30	30	30	30	0.08	365	2235
312	2.04½	5	1,550	310	3,169	634	4.98	640	2236
312	2.35	1	313	313	1,050	1,050	1.99	1,050	2237
156	.75	6	990	150	651	113	3.99	119	2238
155	2.79	1	181	181	354	354	0.85	419	2239
79	.264	1	72	72	19	19	0.92	21	2240
78	1.31½	2	154	75	47	24	1.93	24	2241
391	1.00	2	75	75	78	78	0.26	251	2242
313	1.80½	3	65	45	143	73	9.28	842	2243

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employes not given.

TABLE XXX.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production statement for the establishment was obtained. In referring from this table to those on production by means of

Man- u- fac- tural num- ber.	Es- ta- blish- ment num- ber.	Occupation.	Industry.	Locality.
2344	43	Machinists' helpers—concluded.....	Pig iron	Northern district, U. S.
2345	1	do	Steel ingots	United States
2346	do	do	Steel blooms	United States
2347	do	do	Steel blooms	United States
2348	do	do	Mixed iron and steel	United States
2349	do	do	Mixed iron and steel	United States
2350	do	do	Mixed iron and steel	United States
2351	do	do	Mixed iron and steel	United States
2352	do	do	Mixed iron and steel	United States
2353	43	do	Iron ore	United States
2354	1	Machinists' helper and other	Steel ingots	United States
2355	do	Mail boys	Steel billets	United States
2356	64	Manager	Iron ore	United States
2357	1	Manganese heaters	Steel ingots	United States
2358	2	do	Steel ingots	United States
2359	7	do	Steel ingots	United States
2360	1	Manganese heater and scrapman	Steel ingots	United States
2361	2	Manganese heaters' helpers	Steel ingots	United States
2362	7	do	Steel ingots	United States
2363	do	Markers	Mixed iron and steel	Great Britain
2364	do	do	Mixed iron and steel	Continent of Europe
2365	158	do	Bituminous coal	Continent of Europe
2366	9	Masons	Pig iron	Northern district, U. S.
2367	18	do	Pig iron	Northern district, U. S.
2368	42	do	Pig iron	Northern district, U. S.
2369	58	do	Pig iron	Northern district, U. S.
2370	97	do	Pig iron	Northern district, U. S.
2371	101	do	Pig iron	Southern district, U. S.
2372	109	do	Pig iron	Southern district, U. S.
2373	36	do	Pig iron	Great Britain
2374	57	do	Pig iron	Great Britain
2375	7	do	Muck bar iron	United States
2376	9	do	Muck bar iron	United States
2377	38	do	Muck bar iron	United States
2378	8	do	Finished bar iron	United States
2379	1	do	Steel ingots	United States
2380	do	do	Steel ingots	Continent of Europe
2381	do	do	Steel ingots	Continent of Europe
2382	do	do	Steel billets	United States
2383	do	do	Mixed iron and steel	United States
2384	do	do	Mixed iron and steel	United States
2385	do	do	Mixed iron and steel	United States
2386	do	do	Mixed iron and steel	United States
2387	do	do	Mixed iron and steel	United States
2388	do	do	Mixed iron and steel	Continent of Europe
2389	do	do	Mixed iron and steel	Continent of Europe
2390	do	do	Mixed iron and steel	Continent of Europe
2391	do	do	Mixed iron and steel	Great Britain
2392	do	do	Mixed iron and steel	Great Britain
2393	94	do	Mixed iron and steel	Great Britain
2394	do	do	Bituminous coal	United States
2395	do	do	Bituminous coal	United States
2396	do	do	Bituminous coal	United States
2397	144	do	Bituminous coal	Union of Canada
2398	159	do	Bituminous coal	Continent of Europe
2399	170	do	Bituminous coal	Continent of Europe
2400	13	do	Bituminous coal	Great Britain
2401	19	do	Coke	United States
2402	35	do	Coke	United States
2403	29	do	Coke	United States
2404	do	do	Coke	Continent of Europe
2405	12	do	Iron ore	United States
2406	43	do	Iron ore	United States
2407	72	do	Iron ore	United States
2408	80	Mason and miner	Iron ore	Continent of Europe
2409	46	Masons and painters	Iron ore	United States
2410	34	Mason and stucco	Pig iron	Northern district, U. S.
2411	16	Masons' helpers	Pig iron	Northern district, U. S.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XL. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.	
		Different employées.	Days of work done.		Earnings.		Necessary employées.		Consequent average earnings per em- ployé.
			Total	Average.	Total.	Average.			
365	\$1.00	2	315	158	\$520	\$163	0.26	\$378	2244
313	1.25	4	83	8	41	10	0.11	389	2245
144	1.82½	2	287	144	527	264	3.00	264	2246
251	1.44½	4	45	11	63	16	0.19	363	2247
313	1.50	14	601	43	903	65	1.92	470	2248
168	1.73	1	166	166	291	291	0.99	291	2249
153	.73	2	144	72	109	55	0.93	117	2250
313	1.47	3	936	312	1,376	459	2.93	460	2251
313	.90	5	823	165	741	148	2.02	282	2252
313	1.20	1	312	312	406	406	1.00	407	2253
313	1.31	1	29	29	38	38	0.09	410	2254
202	.43	2	217	109	93	47	1.07	87	2255
217	2.50	1	219	219	547	547	1.01	542	2256
313	1.44	2	292	146	420	210	0.93	450	2257
132	3.60	4	343	86	1,234	309	2.00	475	2258
230	5.20½	2	389	195	2,075	1,013	1.69	1,197	2259
313	1.47½	1	149	149	220	220	0.48	462	2260
132	2.64	2	218	109	576	288	1.65	349	2261
230	2.81½	3	394	131	1,109	370	1.71	447	2262
150	2.60½	5	625	125	1,627	325	4.00	406	2263
98	.21½	12	473	39	101	8	5.14	20	2264
77	.52½	2	83	41	43	22	1.07	40	2265
313	3.12½	10	276	28	862	86	0.88	978	2266
313	3.48	6	376	63	1,309	218	1.20	1,040	2267
313	2.52	4	383	96	965	241	1.22	789	2268
313	1.90	1	314	314	596	596	1.00	594	2269
313	3.50	5	43	9	150	30	0.14	1,092	2270
184	2.63½	2	26	13	95	48	0.14	672	2271
313	3.00	1	1	1	8	8	0.00	939	2272
78	.77½	3	216	72	167	56	2.77	60	2273
78	.70	5	389	78	272	54	4.99	55	2274
153	3.76	2	168	84	632	316	1.09	583	2275
313	6.37	1	259	259	1,650	1,650	0.88	1,994	2276
313	4.16	1	222	222	924	924	0.71	1,303	2277
290	2.73	1	290	290	822	822	1.00	822	2278
313	3.40½	8	119	15	416	52	0.38	1,004	2279
77	.78½	4	229	57	180	45	2.97	61	2280
27	.89½	3	66	22	59	20	2.44	24	2281
202	3.58½	4	418	105	1,498	375	2.07	724	2282
313	3.48	2	821	161	1,110	555	1.03	1,082	2283
313	2.20	11	912	83	2,930	266	2.91	1,006	2284
156	3.52	3	23	8	81	27	0.14	516	2285
313	1.35	1	127	127	171	171	0.41	421	2286
313	3.72	2	281	94	1,045	348	0.90	1,164	2287
313	.56	9	2,139	238	1,199	133	6.83	175	2288
92	.57	5	317	63	180	36	3.45	52	2289
313	.52	15	2,570	238	1,850	123	11.41	162	2290
48	.75	5	257	51	193	39	5.36	36	2291
53	.71½	9	492	55	353	39	9.29	38	2292
313	2.00	2	6	3	18	9	0.02	939	2293
313	2.33½	1	3	3	7	7	0.01	736	2294
313	2.25	1	4	4	9	9	0.01	704	2295
313	2.00	1	310	310	620	620	0.99	626	2296
77	.82	2	11	6	9	5	0.14	63	2297
91	1.40½	1	76	76	110	110	0.84	132	2298
313	2.68	7	794	113	2,112	302	2.54	833	2299
313	2.75	3	31	10	84	28	0.10	848	2300
313	3.50	1	19	19	66	66	0.06	1,087	2301
313	3.50	1	32	32	111	111	0.10	1,086	2302
265	.69½	1	18	18	13	13	0.05	264	2303
313	3.73½	2	15	8	56	28	0.05	1,169	2304
313	1.96	2	51	26	101	51	0.16	620	2305
313	3.82	0	57	15	333	56	0.28	1,198	2306
158	.75	1	147	147	110	110	0.93	118	2307
313	2.54	9	809	90	2,055	228	2.58	795	2308
365	1.98½	1	296	296	567	567	0.78	724	2309
313	1.38½	7	418	60	579	83	1.34	434	2310

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production process in the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
2211	26	Masons' helpers—concluded	Pig iron	Great Britain
2212	27	do	Pig iron	Great Britain
2213	9	do	Muck bar iron	United States
2214	26	do	Muck bar iron	United States
2215	1	do	Steel ingots	United States
2216	do	do	Steel ingots	Continent of Europe
2217	do	do	Steel ingots	Continent of Europe
2218	do	do	Steel billets	United States
2219	do	do	Mixed iron and steel	United States
2220	do	do	Mixed iron and steel	United States
2221	do	do	Mixed iron and steel	United States
2222	do	do	Mixed iron and steel	Continent of Europe
2223	do	do	Mixed iron and steel	Continent of Europe
2224	do	do	Mixed iron and steel	Cont. ent of Europe
2225	do	do	Mixed iron and steel	Great Britain
2226	do	do	Mixed iron and steel	Great Britain
2227	148	do	Bituminous coal	Dominion of Canada
2228	198	do	Bituminous coal	Continent of Europe
2229	12	do	Coke	United States
2230	101	Master machinists	Pig iron	Southern district, U. S.
2231	do	do	Steel blooms	United States
2232	8	Master masons	Pig iron	Northern district, U. S.
2233	1	Master mechanics	Steel ingots	United States
2234	2	do	Steel ingots	United States
2235	do	do	Mixed iron and steel	United States
2236	do	Matchers	Mixed iron and steel	United States
2237	do	Mauler and puncher	Mixed iron and steel	United States
2238	do	Measurers	Mixed iron and steel	Great Britain
2239	do	do	Coke	Continent of Europe
2240	9	Mechanics	Pig iron	Northern district, U. S.
2241	2	do	Steel ingots	United States
2242	7	do	Steel ingots	United States
2243	do	do	Bituminous coal	United States
2244	150	do	Bituminous coal	Continent of Europe
2245	170	do	Bituminous coal	Great Britain
2246	2	Mechanics' helper	Steel ingots	United States
2247	170	Mechanics shop boy	Bituminous coal	Great Britain
2248	1	Melters	Steel ingots	United States
2249	8	do	Steel ingots	United States
2250	do	do	Steel ingots	Continent of Europe
2251	do	do	Mixed iron and steel	United States
2252	do	do	Mixed iron and steel	Continent of Europe
2253	do	do	Mixed iron and steel	Great Britain
2254	5	Melter and melters' helper	Steel ingots	United States
2255	1	Melter and scrapman	Steel ingots	United States
2256	5	Melters helpers	Steel ingots	United States
2257	do	do	Mixed iron and steel	United States
2258	26	Messengers	Pig iron	Great Britain
2259	do	do	Mixed iron and steel	Continent of Europe
2260	do	do	Mixed iron and steel	Continent of Europe
2261	do	do	Mixed iron and steel	Great Britain
2262	9	Metal breakers	Pig iron	North rd district, U. S.
2263	17	do	Muck bar iron	United States
2264	do	do	Steel blooms	United States
2265	do	do	Mixed iron and steel	United States
2266	9	Metal carriers	Pig iron	Northern district, U. S.
2267	53	do	Pig iron	Northern district, U. S.
2268	58	do	Pig iron	Northern district, U. S.
2269	do	do	Pig iron	Great Britain
2270	do	do	Mixed iron and steel	Continent of Europe
2271	9	Metal carrier and ore breaker	Pig iron	Northern district, U. S.
2272	7	Metal stocker	Steel ingots	United States
2273	7	Metal stockers and scrap handlers	Steel ingots	United States
2274	7	Metal washer	Steel ingots	United States
2275	8	Metal wheelers	Finished bar iron	United States
2276	2	do	Steel ingots	United States
2277	7	do	Steel ingots	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.	
		Different employés.	Days of work done.		Earnings.		Necessary employés.		Consequent average earnings per em- ployé.
			Total.	Average.	Total.	Average.			
73	\$0.51	5	379	76	\$193	\$39	4.86	\$40	2311
78	.54½	11	803	78	471	43	11.06	43	2312
313	1.12½	1	191	191	216	216	0.61	354	2313
313	1.71	2	314	157	537	269	1.00	535	2314
313	1.51½	8	449	56	681	85	1.43	475	2315
77	.21½	2	122	61	26	13	1.58	16	2316
27	.39½	4	81	20	32	8	3.00	11	2317
202	1.50	10	328	33	492	49	1.62	303	2318
313	1.42½	21	1,479	70	2,106	100	4.73	446	2319
155	1.55	3	346	115	536	179	2.23	240	2320
313	1.50	1	65	65	98	98	0.21	472	2321
313	.22½	13	2,849	222	657	51	9.23	71	2322
92	.43	5	334	67	143	29	3.63	39	2323
313	.20½	13	2,268	176	474	36	7.31	65	2324
48	.56	6	271	45	148	25	5.66	26	2325
53	.54½	7	400	57	220	31	7.55	29	2326
313	1.20	1	308	308	360	360	0.98	366	2327
77	.57	1	7	7	4	4	0.09	44	2328
313	1.30	7	798	114	1,039	148	2.55	408	2329
184	4.07	2	167	84	680	340	0.91	749	2330
251	3.32	2	341	171	1,132	566	1.35	833	2331
313	4.58	2	43	22	197	90	0.14	1,434	2332
365	6.58½	1	319	319	2,100	2,100	0.87	2,403	2333
144	3.50	1	182	182	637	637	1.26	504	2334
313	3.26	1	215	215	701	701	0.69	1,021	2335
313	1.80	12	2,416	201	4,344	362	7.72	563	2336
155	1.42½	1	40	40	57	57	0.26	221	2337
53	.57	2	150	75	85	43	2.83	30	2338
365	.53	1	294	294	153	153	0.81	100	2339
313	2.00	1	71	71	143	143	0.23	630	2340
144	2.29½	2	313	157	719	360	12.17	331	2341
251	1.77	3	592	197	1,047	349	2.36	444	2342
313	2.66	1	5	5	13	13	0.02	814	2343
77	1.91½	1	75	75	144	144	0.97	148	2344
61	1.10½	2	162	81	179	90	1.78	101	2345
144	1.50	1	104	104	158	158	0.72	219	2346
91	.53½	1	74	74	38	38	0.81	47	2347
313	3.33½	3	279	93	930	310	0.89	1,043	2348
132	3.03	1	135	135	409	409	1.02	400	2349
78	.81½	22	1,386	63	1,132	51	17.76	64	2350
313	(a)	4	(a)	(a)	3,497	874	(a)	(a)	2351
313	1.11	3	853	284	915	315	2.73	347	2352
53	(a)	6	(a)	(a)	271	45	(a)	(a)	2353
132	2.28½	1	119	119	272	272	0.90	302	2354
313	2.54	1	50	50	127	127	0.16	795	2355
132	1.81	2	142	71	257	129	1.08	239	2356
313	(a)	11	(a)	(a)	5,024	457	(a)	(a)	2357
91	.28	1	91	91	25	25	1.00	25	2358
313	.60½	1	332	332	201	201	1.06	149	2359
313	.17½	1	304	304	53	53	0.97	55	2360
48	.31½	2	96	48	30	15	2.00	15	2361
365	1.94½	8	1,186	148	2,308	249	3.25	710	2362
266	2.00	5	750	150	1,475	295	2.62	562	2363
230	1.90	15	1,785	119	2,327	222	7.76	429	2364
313	1.83½	15	850	57	1,560	104	2.72	574	2365
365	2.92	19	1,274	67	3,720	196	3.50	1,066	2366
181	3.01	8	886	111	2,665	333	4.90	544	2367
313	(a)	(b)	(a)	(a)	16,093	(b)	(a)	(a)	2368
135	1.30	19	2,565	135	3,320	175	19.00	175	2369
77	.31	1	69	69	21	21	0.90	23	2370
365	2.61½	1	151	151	395	395	0.41	955	2371
230	2.50	1	6	6	15	15	0.03	575	2372
230	2.78	2	217	109	603	302	0.94	639	2373
230	1.50	1	6	6	9	9	0.03	345	2374
299	1.70	1	277	277	471	471	0.93	508	2375
132	2.33½	13	977	75	2,280	175	7.40	308	2376
230	3.48	10	1,672	167	5,819	582	7.27	800	2377

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
b Number of employés not given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
2378	9	Metal wheeler and puller-down	Steel ingots	United States
2379	7	Metal wheelers and scrap stockers	Steel ingots	United States
2380		Metal worker	Steel blooms	United States
2381		Metal worker and metal worker's helper	Steel blooms	United States
2382		Metal workers' helpers	Steel blooms	United States
2383	7	Millwrights	Muck bar iron	United States
2384	26	do	Muck bar iron	United States
2385	6	do	Finished bar iron	United States
2386		do	Mixed iron and steel	United States
2387		do	Mixed iron and steel	United States
2388		do	Mixed iron and steel	United States
2389		do	Mixed iron and steel	United States
2390		do	Mixed iron and steel	Great Britain
2391		do	Mixed iron and steel	Great Britain
2392		Millwrights, assistant	Mixed iron and steel	United States
2393		do	Mixed iron and steel	United States
2394		Millwrights' laborers	Mixed iron and steel	Great Britain
2395	19	Mine bosses	Bituminous coal	United States
2396	26	do	Bituminous coal	United States
2397	107	do	Bituminous coal	United States
2398	145	do	Bituminous coal	Dominion of Canada
2399	156	do	Bituminous coal	Continent of Europe
2400	1	do	Iron ore	United States
2401	13	do	Iron ore	United States
2402	41	do	Iron ore	United States
2403	48	do	Iron ore	United States
2404	51	do	Iron ore	United States
2405	59	do	Iron ore	United States
2406	64	do	Iron ore	United States
2407	69	do	Iron ore	United States
2408	72	do	Iron ore	United States
2409	148	Mine bosses, assistant	Bituminous coal	Dominion of Canada
2410	156	do	Bituminous coal	Continent of Europe
2411	51	do	Iron ore	United States
2412	156	Mine boss, chief	Bituminous coal	Continent of Europe
2413	72	Mine runner	Iron ore	United States
2414	18	Miners	Bituminous coal	United States
2415	85	do	Bituminous coal	United States
2416	96	do	Bituminous coal	United States
2417	107	do	Bituminous coal	United States
2418	109	do	Bituminous coal	United States
2419		do	Bituminous coal	United States
2420		do	Bituminous coal	United States
2421		do	Bituminous coal	United States
2422		do	Bituminous coal	United States
2423	148	do	Bituminous coal	Dominion of Canada
2424	156	do	Bituminous coal	Continent of Europe
2425		do	Bituminous coal	Continent of Europe
2426	170	do	Bituminous coal	Great Britain
2427	1	do	Iron ore	United States
2428	12	do	Iron ore	United States
2429	41	do	Iron ore	United States
2430	42	do	Iron ore	United States
2431	43	do	Iron ore	United States
2432	44	do	Iron ore	United States
2433	45	do	Iron ore	United States
2434	48	do	Iron ore	United States
2435	48	do	Iron ore	United States
2436	51	do	Iron ore	United States
2437	56	do	Iron ore	United States
2438	59	do	Iron ore	United States
2439	61	do	Iron ore	United States
2440	64	do	Iron ore	United States
2441	69	do	Iron ore	United States
2442	72	do	Iron ore	United States
2443	76	do	Iron ore	Continent of Europe
2444	77	do	Iron ore	Continent of Europe
2445	86	do	Iron ore	Continent of Europe

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless the establishment number is given. Where no statement of cost of production is given, these numbers, note should be taken of the industry as a new series of numbers is used for each.

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- ginal num- ber.	
		Different employees.	Days of work done.		Earnings.		Necessary employees.		Consequent average earnings per em- ployee.
			Total.	Average.	Total.	Average.			
220	\$2.15	1	23	33	\$71	\$71	0.14	\$483	2375
230	2.18	2	236	85	558	168	1.15	501	2379
251	3.00	1	170	170	511	511	0.68	734	2380
251	2.01	1	121	121	363	363	0.48	730	2381
251	2.75	1	553	197	1,081	841	1.57	690	2382
155	1.04	2	95	48	156	78	0.61	283	2383
213	2.23	2	277	139	918	309	0.89	698	2384
290	3.78	1	300	300	1,123	1,123	1.00	1,119	2385
317	3.38	1	420	420	1,429	1,429	1.37	1,040	2386
166	2.08	2	154	77	474	237	0.92	817	2387
155	3.23	2	215	108	483	242	1.39	348	2388
313	4.59	2	137	137	617	617	0.44	1,410	2389
156	1.41	1	263	263	517	517	2.33	37	2390
88	7.71	2	134	67	94	47	2.51	37	2391
313	2.09	2	434	217	950	475	1.45	655	2392
318	1.72	3	614	205	1,407	554	2.06	558	2393
166	1.88	3	649	216	578	193	4.16	139	2394
184	3.28	1	184	184	420	420	1.00	420	2395
313	1.91	1	373	373	717	717	1.19	602	2396
313	2.64	1	183	183	490	490	0.58	828	2397
77	1.15	6	415	69	477	80	5.39	89	2398
365	3.56	1	365	365	1,200	1,200	1.00	1,300	2400
313	4.70	1	313	313	1,500	1,500	1.00	1,500	2401
313	2.00	1	301	301	601	601	0.26	623	2402
313	1.73	1	313	313	540	540	1.00	540	2403
313	2.20	1	286	286	660	660	0.91	722	2404
365	2.63	1	365	365	660	660	1.00	660	2405
168	1.35	2	506	168	420	210	2.00	210	2406
313	2.39	1	313	313	720	720	1.00	720	2407
313	4.61	2	630	313	2,328	1,365	2.01	1,254	2408
365	1.80	2	720	365	1,313	660	2.06	660	2409
77	1.77	6	245	41	195	33	3.18	61	2410
313	1.84	1	266	266	385	385	0.91	421	2411
77	1.62	1	73	73	111	111	0.93	117	2412
318	2.10	1	15	15	32	32	0.93	668	2413
158	(a)	176	(a)	(a)	38,305	172	(a)	(a)	2414
313	(a)	180	(a)	(a)	17,025	92	(a)	(a)	2415
313	(a)	412	(a)	(a)	53,813	130	(a)	(a)	2416
313	(a)	235	(a)	(a)	29,838	117	(a)	(a)	2417
313	(a)	467	(a)	(a)	106,686	228	(a)	(a)	2418
318	(a)	227	(a)	(a)	58,615	256	(a)	(a)	2419
313	2.12	284	28,531	100	62,612	230	91.15	687	2420
365	(a)	434	(a)	(a)	78,168	180	(a)	(a)	2421
313	2.09	812	45,658	56	91,276	113	145.97	620	2422
318	1.86	86	29,127	234	37,450	436	64.25	582	2423
77	1.02	134	6,383	48	6,383	49	82.93	70	2424
62	1.87	84	2,990	30	7,539	34	46.20	48	2425
91	(a)	411	(a)	(a)	36,611	89	(a)	(a)	2426
313	(a)	(b)	(a)	(a)	35,837	(b)	(a)	(a)	2427
313	2.37	98	14,882	150	35,832	270	47.66	742	2428
313	1.08	153	16,200	104	17,064	112	52.28	339	2429
313	1.38	263	10,660	149	62,834	261	124.73	423	2430
318	1.29	186	12,215	65	15,862	84	39.09	406	2431
317	1.25	24	4,973	170	5,094	212	18.78	271	2432
313	1.61	203	24,224	120	30,240	192	77.71	505	2433
318	1.40	135	25,536	184	35,408	264	81.10	439	2434
312	1.50	28	2,396	89	3,605	128	7.66	471	2435
313	1.69	34	4,144	122	7,672	207	13.25	531	2436
313	1.25	16	1,671	104	2,093	131	5.24	392	2437
313	1.15	22	1,781	81	2,052	95	5.70	361	2438
135	1.26	9	1,729	20	407	46	2.10	194	2439
135	1.82	45	3,101	70	2,632	58	20.56	129	2440
318	1.04	148	11,678	73	11,747	75	35.39	315	2441
314	1.04	219	24,644	117	49,163	224	78.74	624	2442
317	1.6	14	4,141	290	3,464	216	13.25	299	2443
317	1.01	12	1,654	136	1,674	90	3.29	318	2444
158	7.71	191	28,278	140	18,637	100	156.99	113	2445

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
 b Number of employes not given.

TABLE XXII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Man- ual num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
2446	148	Miners and miners' helpers.	Bituminous coal	Dominion of Canada.
2447	65	Miners and ore cleaners.	Iron ore	United States.
2448	64	do	Iron ore	United States.
2449	72	Miners and pit bosses.	Iron ore	United States.
2450		Miner and propman.	Bituminous coal	United States.
2451	107	Miners and pumpmen.	Bituminous coal	United States.
2452		do	Bituminous coal	United States.
2453	72	do	Iron ore	United States.
2454	100	Miners and rockmen.	Bituminous coal	United States.
2455	100	Miners and shifters.	Bituminous coal	United States.
2456		do	Bituminous coal	United States.
2457		Miners and shovellers.	Bituminous coal	United States.
2458	45	Miner and stableman.	Iron ore	United States.
2459	72	Miner and teamster.	Iron ore	United States.
2460	148	Miners and timbermen.	Bituminous coal	Dominion of Canada.
2461	94	Miners and tipplers.	Bituminous coal	United States.
2462		Miners and tracklayers.	Bituminous coal	United States.
2463		Miner and tram-road repairer.	Bituminous coal	United States.
2464		Miners and trappers.	Bituminous coal	United States.
2465		do	Bituminous coal	United States.
2466	42	Miner and wagonmaker.	Iron ore	United States.
2467	42	Miner and watchman.	Iron ore	United States.
2468	107	Miner and water boy.	Bituminous coal	United States.
2469		Miner and water hauler.	Bituminous coal	United States.
2470	41	Miner and weighman.	Iron ore	United States.
2471	148	Miners' helpers.	Bituminous coal	Dominion of Canada.
2472	130	do	Bituminous coal	Continent of Europe.
2473	65	do	Iron ore	United States.
2474	72	do	Iron ore	United States.
2475	7	Mixers.	Muck bar iron	United States.
2476		do	Mixed iron and steel	Continent of Europe.
2477		Mixers and mixers' helpers.	Steel blooms.	United States.
2478	4	Mortar man.	Coke	United States.
2479	7	Mould copper.	Steel ingots	United States.
2480	7	Mould coppers and pushers.	Steel ingots	United States.
2481	1	Mould coolers.	Steel ingots	United States.
2482	1	Mould cooler and stocker.	Steel ingots	United States.
2483	7	Mould setters.	Steel ingots	United States.
2484		do	Steel ingots	Continent of Europe.
2485		do	Steel ingots	Continent of Europe.
2486		Mould setters and steel pourers.	Steel ingots	Continent of Europe.
2487	7	Mould swingers.	Steel ingots	United States.
2488		do	Steel ingots	Continent of Europe.
2489	7	Mould washers.	Steel ingots	United States.
2490	10	Moulders.	Pig iron	Northern district, U. S.
2491	22	do	Pig iron	Northern district, U. S.
2492	41	do	Pig iron	Northern district, U. S.
2493	42	do	Pig iron	Northern district, U. S.
2494	103	do	Pig iron	Southern district, U. S.
2495	100	do	Pig iron	Southern district, U. S.
2496	36	do	Pig iron	Great Britain.
2497	27	do	Pig iron	Great Britain.
2498		do	Pig iron	Great Britain.
2499		do	Mixed iron and steel	Continent of Europe.
2500		do	Mixed iron and steel	Great Britain.
2501	42	do	Iron ore	United States.
2502	103	Moulder and stocker.	Pig iron	Southern district, U. S.
2503	41	Moulders' helpers.	Pig iron	Northern district, U. S.
2504	42	do	Iron ore	United States.
2505		Mouldmen.	Steel ingots	United States.
2506	1	Mouldman and scrap cleaner.	Steel ingots	United States.
2507	1	Mouldman and scrap cleaner.	Steel ingots	United States.
2508	36	Nax ties.	Pig iron	Great Britain.
2509	42	Nozzlemen.	Iron ore	United States.
2510	37	Nummer taker.	Pig iron	Great Britain.
2511		Nutmereis.	Steel rails	Continent of Europe.
2512		Nut driver.	Mixed iron and steel	United States.
2513		Nut tappers.	Mixed iron and steel	United States.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless the establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
313	\$1.64	8	1,682	210	\$2,750	\$315	5.37	2446	
313	1.56	4	378	95	590	148	1.31	2447	
313	.67	1	88	88	57	57	0.53	2448	
313	2.25	5	851	170	1,617	343	2.72	2449	
365	(a)	1	(a)	(a)	343	343	(a)	2450	
313	(a)	1	(a)	(a)	174	174	(a)	2451	
365	(a)	1	(a)	(a)	324	324	(a)	2452	
313	1.96	2	547	274	1,068	545	1.75	2453	
313	(a)	12	(a)	(a)	1,590	133	(a)	2454	
313	(a)	1	(a)	(a)	544	544	(a)	2455	
365	(a)	1	(a)	(a)	478	478	(a)	2456	
313	(a)	2	(a)	(a)	985	248	(a)	2457	
313	1.37	1	28	28	34	34	0.08	2458	
313	2.11	1	83	83	112	112	0.17	2459	
313	1.54	5	1,130	226	1,755	351		2460	
313	(a)	2	(a)	(a)	552	276	(a)	2461	
313	2.10	2	120	60	253	126	0.38	2462	
313	(a)	1	(a)	(a)	110	110	(a)	2463	
313	1.70	2	88	44	150	75	0.28	2464	
365	(a)	1	(a)	(a)	145	145	(a)	2465	
313	1.44	1	298	298	434	434	0.06	2466	
313	1.24	1	340	340	422	422	1.09	2467	
313	(a)	1	(a)	(a)	294	294	(a)	2468	
313	1.87	1	88	88	105	105	0.28	2469	
313	1.18	1	207	207	244	244	0.66	2470	
313	1.21	45	6,190	134	7,512	167	19.78	2471	
77	.88	23	1,674	47	693	26	13.93	2472	
313	1.67	2	265	132	177	89	8.6	2473	
313	1.91	24	3,154	93	5,045	178	10.68	2474	
143	1.25	4	1,638	408	101	48	1.07	2475	
313	.40	6	1,798	300	492	147	5.74	2476	
113	1.83	5	670	134	1,228	246	4.07	2477	
92	1.80	1	54	54	54	54	0.59	2478	
230	1.74	1	191	191	714	714	0.83	2479	
230	2.40	2	274	137	660	473	1.19	2480	
313	1.35	8	240	30	326	41	0.77	2481	
313	1.70	1	26	26	45	45	0.08	2482	
230	5.31	4	742	186	3,041	760	3.22	2483	
77	.63	4	238	60	150	38	2.00	2484	
77	1.75	9	140	17	111	12	0.52	2485	
37	.83	2	48	24	40	20	1.76	2486	
230	5.31	4	714	179	2,782	695	2.11	2487	
77	.92	3	135	68	134	62	1.78	2488	
230	1.55	5	679	134	1,036	207	2.51	2489	
245	1.53	2	265	133	467	234	0.73	2490	
365	2.22	3	328	109	728	243	0.80	2491	
167	1.65	3	331	110	546	182	1.86	2492	
365	1.69	2	401	201	677	339	1.10	2493	
365	1.73	1	1,488	147	2,572	257	4.01	2494	
365	1.63	1	1,268	268	414	414	0.73	2495	
91	1.56	21	1,396	66	818	39	13.34	2496	
91	.67	1	72	72	48	48	0.79	2497	
135	.92	1	135	135	124	124	1.00	2498	
313	.71	45	10,987	224	7,156	150	22.22	2499	
53	(a)	14	(a)	(a)	662	48	(a)	2500	
313	2.25	1	279	279	827	827	0.89	2501	
365	1.23	1	744	144	177	177	0.39	2502	
167	1.50	2	310	155	474	237	1.89	2503	
313	1.15	1	202	202	361	361		2504	
313	2.99	26	2,772	107	8,289	319	8.65	2505	
313	2.50	1	42	42	109	109	0.13	2506	
313	1.94	1	74	74	147	147	0.24	2507	
91	.53	8	454	57	250	31	4.99	2508	
313	1.45	3	852	284	1,228	408	2.72	2509	
91	.40	1	92	92	37	37	1.01	2510	
78	.44	2	130	70	82	31	1.79	2511	
213	1.48	1	101	101	167	167	0.32	2512	
313	1.56	2	87	44	136	68	0.28	2513	

Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal estab- lish- ment num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
2514		Office boys.....	Mixed iron and steel.....	United States.....
2515	109	do.....	Bituminous coal.....	United States.....
2516	do	do.....	Bituminous coal.....	United States.....
2517	59	Oilers.....	Pig iron.....	Northern district, U. S.
2518	109	do.....	Pig iron.....	Southern district, U. S.
2519	1	do.....	Steel ingots.....	United States.....
2520	do	do.....	Steel billets.....	United States.....
2521	do	do.....	Steel blooms.....	United States.....
2522	do	do.....	Mixed iron and steel.....	United States.....
2523	169	do.....	Bituminous coal.....	United States.....
2524	do	do.....	Bituminous coal.....	United States.....
2525	156	do.....	Bituminous coal.....	Continent of Europe.....
2526	do	Oilier and puddler's helper.....	Mixed iron and steel.....	United States.....
2527	do	Oilier and trapper.....	Bituminous coal.....	United States.....
2528	do	Oilers and wheelers.....	Mixed iron and steel.....	Great Britain.....
2529	do	Oil room hands.....	Mixed iron and steel.....	United States.....
2530	do	Onsetters.....	Pig iron.....	Great Britain.....
2531	do	Onset-err, assistant.....	Pig iron.....	Great Britain.....
2532	9	Ore breakers.....	Pig iron.....	Northern district, U. S.
2533	32	do.....	Pig iron.....	Northern district, U. S.
2534	do	do.....	Pig iron.....	Continent of Europe.....
2535	45	Ore cleaners.....	Iron ore.....	United States.....
2536	84	do.....	Iron ore.....	United States.....
2537	28	Ore crushers.....	Mock bar iron.....	United States.....
2538	9	Ore dumpers.....	Pig iron.....	Northern district, U. S.
2539	101	do.....	Pig iron.....	Southern district, U. S.
2540	do	Ore fillers.....	Mixed iron and steel.....	Great Britain.....
2541	do	Ore grinders.....	Mixed iron and steel.....	United States.....
2542	do	do.....	Mixed iron and steel.....	United States.....
2543	do	do.....	Mixed iron and steel.....	Great Britain.....
2544	do	Ore men.....	Mixed iron and steel.....	Continent of Europe.....
2545	9	Ore pillars.....	Pig iron.....	Northern district, U. S.
2546	44	Ore raisers.....	Iron ore.....	United States.....
2547	80	Ore settlers.....	Iron ore.....	Continent of Europe.....
2548	43	Ore sorters.....	Iron ore.....	United States.....
2549	42	Ore sorter and pit boss.....	Iron ore.....	United States.....
2550	17	Ore stockers.....	Mock bar iron.....	United States.....
2551	40	Ore wheelers.....	Pig iron.....	Continent of Europe.....
2552	7	do.....	Mock bar iron.....	United States.....
2553	do	do.....	Mixed iron and steel.....	United States.....
2554	41	Ovenmen.....	Pig iron.....	Northern district, U. S.
2555	do	Overseers.....	Steel ingots.....	Continent of Europe.....
2556	do	do.....	Steel ingots.....	Continent of Europe.....
2557	do	do.....	Steel rails.....	Continent of Europe.....
2558	do	do.....	Mixed iron and steel.....	Continent of Europe.....
2559	do	do.....	Bituminous coal.....	Continent of Europe.....
2560	do	Packers.....	Mixed iron and steel.....	United States.....
2561	38	Painters.....	Pig iron.....	Northern district, U. S.
2562	1	do.....	Steel ingots.....	United States.....
2563	do	do.....	Steel billets.....	United States.....
2564	1	Panhouse men.....	Steel ingots.....	United States.....
2565	1	Panhouse run and scrapman.....	Steel ingots.....	United States.....
2566	do	Presser.....	Mixed iron and steel.....	Great Britain.....
2567	do	Patcher.....	Mixed iron and steel.....	Great Britain.....
2568	do	Patternmakers.....	Mixed iron and steel.....	United States.....
2569	do	do.....	Mixed iron and steel.....	United States.....
2570	do	do.....	Mixed iron and steel.....	Great Britain.....
2571	do	do.....	Mixed iron and steel.....	Great Britain.....
2572	42	do.....	Iron ore.....	United States.....
2573	29	Peeblers.....	Fin steel bar iron.....	Great Britain.....
2574	7	Physic man.....	Mock bar iron.....	United States.....
2575	148	Pick handler.....	Bituminous coal.....	Dominion of Canada.....
2576	156	Pickers.....	Bituminous coal.....	Continent of Europe.....
2577	do	do.....	Coal.....	Continent of Europe.....
2578	do	Pickers.....	Mixed iron and steel.....	United States.....
2579	do	Picklers helpers.....	Mixed iron and steel.....	United States.....
2580	do	Pig iron panmen.....	Mixed iron and steel.....	Continent of Europe.....
2581	20	Pilers.....	Finished bar iron.....	Great Britain.....

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XL Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.					Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.
		Different employés.	Days of work done.		Earnings.		Necessary employés.	Consequent average earnings per em- ployé.	
			Total.	Average.	Total.	Average.			
313	\$0.41½	2	312	156	\$131	\$66	1.00	\$131	2514
313	.55	1	140	140	78	78	0.45	174	2515
313	.50	1	4	4	2	2	0.01	157	2516
181	1.35	1	182	182	246	246	1.01	245	2517
365	1.00	1	361	361	361	361	0.99	365	2518
313	1.36	6	483	81	656	109	1.54	425	2519
202	1.42½	2	330	165	470	235	1.63	288	2520
230	1.65	8	765	96	1,247	156	3.33	375	2521
313	1.41½	5	881	176	1,247	249	2.81	443	2522
313	.90	1	249	249	226	226	0.80	284	2523
313	1.15	2	27	14	31	16	0.08	359	2524
77	.36	4	106	27	38	10	1.33	28	2525
313	1.51½	1	191	191	293	293	0.61	463	2526
313	.93	1	262	262	244	244	0.84	201	2527
48	1.77	2	87	44	154	77	1.61	85	2528
155	1.76	2	258	129	454	227	1.67	273	2529
135	1.01	2	270	135	273	137	2.00	137	2530
135	.87	2	270	135	234	117	2.00	117	2531
365	1.60	23	1,090	48	1,761	77	3.01	565	2532
365	1.50	11	801	73	1,182	107	2.19	539	2533
91	.53	6	422	70	224	37	4.64	48	2534
313	1.50	9	548	61	823	91	1.75	470	2535
155	.47	5	190	38	89	18	1.23	73	2536
313	1.31½	5	480	96	631	126	1.54	411	2537
365	2.00	1	1	1	2	2	0.00	730	2538
184	1.20	7	317	45	360	54	1.73	221	2539
156	.97½	2	94	47	91	46	0.60	151	2540
313	1.70	1	355	355	605	605	1.13	543	2541
313	1.50	1	833	333	469	469	1.06	460	2542
156	1.30	1	179	179	232	232	1.15	202	2543
79	.55	2	129	65	71	36	1.63	43	2544
365	1.60	6	163	27	259	43	0.45	580	2545
217	1.35	7	1,296	185	1,750	250	5.97	293	2546
156	.52	8	1,241	155	647	81	7.66	82	2547
313	1.37	8	1,487	186	2,040	255	4.75	429	2548
313	1.51	1	222	222	335	335	0.71	472	2549
286	1.37½	2	143	72	195	98	0.50	390	2550
90	.66	5	426	85	282	56	4.73	60	2551
143	1.86	1	87	87	161	161	0.61	265	2552
313	1.80	1	278	278	492	492	0.69	554	2553
167	1.75	2	329	165	577	289	1.97	293	2554
31	.96½	2	65	33	63	32	2.10	80	2555
78	1.45½	2	171	86	249	125	2.19	114	2556
78	1.07	6	417	70	447	75	5.25	84	2557
313	.53½	2	478	237	254	127	1.51	168	2558
52	.83½	1	60	60	50	50	1.15	43	2559
313	1.08½	2	268	134	291	146	0.66	340	2560
313	1.68½	4	371	93	625	156	1.19	527	2561
313	1.58½	3	36	12	57	19	0.12	496	2562
202	2.33½	1	3	3	7	7	0.01	471	2563
313	1.37½	0	670	97	1,198	133	2.77	431	2564
313	1.50	1	2	2	3	3	0.01	470	2565
53	.41	1	54	54	43	43	1.02	42	2566
48	(a)	1	(a)	(a)	104	104	(a)	(a)	2567
155	2.88	2	216	108	619	310	1.29	446	2568
313	2.00	1	209	209	419	419	0.67	627	2569
156	1.42	2	318	159	450	225	2.04	221	2570
53	.89	1	53	53	47	47	1.00	47	2571
313	2.00	1	302	302	605	605	0.96	627	2572
90	1.09½	2	215	108	236	118	2.17	109	2573
143	1.25	1	98	98	122	122	0.60	178	2574
313	1.15	1	292	292	335	335	0.23	359	2575
77	.25½	3	213	71	54	18	2.77	20	2576
365	.19½	2	338	169	66	33	0.93	71	2577
313	1.74	4	1,598	400	2,779	695	5.11	544	2578
313	1.55	6	1,651	275	2,553	426	5.87	485	2579
313	.68½	0	2,515	279	1,722	191	8.53	314	2580
90	.81	4	350	89	289	72	3.60	89	2581

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
2582		Piler—concluded.....	Mixed iron and steel..	United States.....
2583		.. do	Mixed iron and steel..	United States.....
2584		.. do	Mixed iron and steel..	Continent of Europe..
2585		.. do	Mixed iron and steel..	Great Britain.....
2586		.. do	Mixed iron and steel..	Great Britain.....
2587		Piler, chief.....	Mixed iron and steel..	Continent of Europe..
2588		Piler and puncher.....	Mixed iron and steel..	United States.....
2589		Piler helper.....	Mixed iron and steel..	Continent of Europe..
2590		Pin pointers.....	Mixed iron and steel..	United States.....
2591		Punchers.....	Mixed iron and steel..	Great Britain.....
2592	10	Pipe cutters.....	Pig iron.....	Northern district, U. S.
2593	1	.. do	Steel ingots.....	United States.....
2594		.. do	Steel billets.....	United States.....
2595		.. do	Mixed iron and steel..	United States.....
2596		.. do	Mixed iron and steel..	United States.....
2597		Pipe layer.....	Bituminous coal.....	United States.....
2598		Pipe-line boss.....	Mixed iron and steel..	United States.....
2599	45	Pipeman.....	Iron ore.....	United States.....
2600	98	Pit bosses.....	Bituminous coal.....	United States.....
2601	107	.. do	Bituminous coal.....	United States.....
2602		.. do	Bituminous coal.....	United States.....
2603		.. do	Bituminous coal.....	United States.....
2604	12	.. do	Iron ore.....	United States.....
2605	43	.. do	Iron ore.....	United States.....
2606	72	.. do	Iron ore.....	United States.....
2607	1	Pit cleaners.....	Steel ingots.....	United States.....
2608	7	.. do	Steel ingots.....	United States.....
2609		.. do	Steel ingots.....	Continent of Europe..
2610		.. do	Steel ingots.....	Continent of Europe..
2611	2	Pitmen.....	Steel ingots.....	United States.....
2612	5	.. do	Steel ingots.....	United States.....
2613		.. do	Steel ingots.....	Continent of Europe..
2614		.. do	Mixed iron and steel..	United States.....
2615		.. do	Mixed iron and steel..	Great Britain.....
2616		.. do	Mixed iron and steel..	Great Britain.....
2617		Pitman and puncher.....	Steel ingots.....	United States.....
2618		Pitman and puncher helper.....	Steel ingots.....	United States.....
2619		Pitman and sanders.....	Steel ingots.....	United States.....
2620		Pitman and steel cladders.....	Steel ingots.....	United States.....
2621	5	Pitmen and steel.....	Steel ingots.....	United States.....
2622		Pit drafters.....	Mixed iron and steel..	Continent of Europe..
2623		Pit heaters.....	Mixed iron and steel..	Continent of Europe..
2624		Pit holders.....	Mixed iron and steel..	Great Britain.....
2625		Pit loaders.....	Pig iron.....	Great Britain.....
2626	29	.. do	Pig iron.....	Great Britain.....
2627		.. do	Mixed iron and steel..	Great Britain.....
2628		.. do	Mixed iron and steel..	Great Britain.....
2629	118	.. do	Bituminous coal.....	Dominion of Canada..
2630	170	.. do	Bituminous coal.....	Great Britain.....
2631		Pit layers liberator.....	Mixed iron and steel..	Great Britain.....
2632		Pit repairers.....	Mixed iron and steel..	Continent of Europe..
2633		Pit water.....	Mixed iron and steel..	Continent of Europe..
2634		Pitmen.....	Mixed iron and steel..	United States.....
2635		Pitman and straightener.....	Mixed iron and steel..	United States.....
2636		Pitmen.....	Steel ingots.....	United States.....
2637	170	.. do	Bituminous coal.....	Great Britain.....
2638		Pitmen helper.....	Steel ingots.....	United States.....
2639		Pitmen.....	Mixed iron and steel..	United States.....
2640		.. do	Mixed iron and steel..	United States.....
2641	13	Pitmen.....	Pig iron.....	Northern district, U. S.
2642		.. do	Mixed iron and steel..	United States.....
2643		.. do	Mixed iron and steel..	United States.....
2644		.. do	Bituminous coal.....	United States.....
2645		.. do	Bituminous coal.....	United States.....
2646	101	Pitmen.....	Pig iron.....	Southern district, U. S.
2647		.. do	Mixed iron and steel..	United States.....
2648		.. do	Mixed iron and steel..	Continent of Europe..

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion. Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.	
		Different employées.	Days of work done.		Earnings.		Necessary employées.		Consequent average earnings per em- ployé.
			Total.	Average.	Total.	Average.			
313	\$1.48	29	3,615	125	\$5,351	\$185	11.55	\$463	2592
313	1.41	10	2,178	218	3,072	307	6.06	441	2593
77	.70½	3	153	51	108	36	1.09	54	2594
48	.33	7	832	47	110	16	6.01	16	2595
156	1.36½	2	256	128	350	175	1.64	214	2596
77	.05½	1	75	75	71	71	0.97	73	2597
313	1.33½	1	3	3	4	4	0.01	417	2598
77	.38½	1	74	74	29	29	0.06	30	2599
168	.75	8	442	55	332	42	2.03	126	2500
156	1.20½	7	780	111	988	141	5.00	197	2501
313	1.75½	3	163	54	244	95	0.52	540	2502
313	1.81½	4	161	40	292	73	0.52	508	2503
202	1.86	3	520	173	967	322	2.57	376	2504
156	1.50	1	157	157	220	220	1.01	226	2505
313	2.09½	3	837	112	1,010	337	1.08	938	2506
313	2.00	1	153	153	306	306	0.40	626	2507
313	2.50	1	131	131	323	323	0.42	777	2508
313	1.75	1	72	72	126	126	0.23	548	2509
313	2.43½	2	256	128	623	312	0.81	763	2600
313	2.50	1	130	130	323	323	0.42	783	2601
313	2.87½	1	313	313	900	900	1.00	900	2602
313	1.67½	2	350	195	650	325	1.24	823	2603
313	2.50	2	509	300	1,498	749	1.91	783	2604
313	1.60½	7	1,209	173	1,941	277	3.86	503	2605
313	2.35	11	2,474	225	5,909	538	7.00	735	2606
313	2.41	11	1,045	95	2,521	229	3.34	755	2607
230	1.55	12	685	57	1,061	88	2.98	358	2608
77	.62½	3	153	51	06	32	1.09	48	2609
27	.62½	1	20	30	19	19	1.11	17	2610
132	3.58½	15	1,386	92	4,067	231	10.50	473	2611
132	1.60½	2	222	111	376	184	1.08	224	2612
78	.67	33	1,922	58	1,243	39	24.04	52	2613
313	(a)	9	(a)	(a)	2,043	338	(a)	(a)	2614
156	(a)	6	(a)	(a)	625	104	(a)	(a)	2615
53	(a)	13	(a)	(a)	455	35	(a)	(a)	2616
132	2.33	1	112	112	261	261	0.86	308	2617
230	3.13	1	153	153	479	479	0.67	720	2618
132	2.01½	2	203	102	592	296	1.54	385	2619
132	3.00½	2	203	102	622	311	1.54	404	2620
132	1.38	10	323	32	445	45	2.45	182	2621
313	.78	3	1,062	354	831	277	3.39	245	2622
313	.69	2	621	311	428	214	1.98	216	2623
53	.24½	2	56	28	14	7	1.06	13	2624
135	.70	5	580	116	457	91	4.30	106	2625
99	.77	2	230	115	176	88	2.33	76	2626
156	.97½	1	143	143	139	139	0.03	152	2627
53	.50	1	41	41	24	24	0.77	31	2628
313	1.10	2	333	167	366	183	1.06	344	2629
91	.93½	3	232	77	217	72	2.56	85	2630
156	.81	1	143	143	114	114	0.92	124	2631
313	.53½	5	1,605	320	911	182	5.42	168	2632
313	.66	1	331	331	218	218	1.06	206	2633
313	1.65	26	3,154	121	5,101	200	10.04	515	2634
313	1.18	1	50	50	59	59	0.16	309	2635
144	2.00	1	147	147	294	294	1.02	288	2636
91	1.23½	1	79	79	100	100	0.87	115	2637
144	1.50	1	167	167	252	252	1.16	217	2638
286	2.25	2	245	123	531	276	0.46	643	2639
287	1.50	5	1,222	244	1,833	367	4.26	431	2640
365	1.48	8	418	52	618	77	1.15	540	2641
313	1.25	2	267	134	353	167	0.85	390	2642
155	1.50	7	570	83	800	123	3.74	230	2643
313	1.50	7	1,085	155	1,626	232	3.47	469	2644
313	.95½	1	131	131	125	125	0.42	299	2645
313	.95½	2	163	82	156	78	0.52	300	2646
184	.08	1	153	153	150	150	0.82	180	2647
313	1.48	1	356	356	527	527	1.14	463	2648
92	.42	8	628	79	265	33	0.83	39	2649

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
2550		Porters—concluded	Mixed iron and steel	Continent of Europe
2551		do	Coke	Continent of Europe
2552		Press hands	Steel rails	Continent of Europe
2553		Pressmen	Steel blooms	United States
2554		do	Mixed iron and steel	Great Britain
2555		Pressmen's helpers	Steel blooms	United States
2556		Propman and weighman	Bituminous coal	United States
2557	7	Puddlers	Muck bar iron	United States
2558	8	do	Muck bar iron	United States
2559	17	do	Muck bar iron	United States
2560	26	do	Muck bar iron	United States
2561		do	Mixed iron and steel	United States
2562		do	Mixed iron and steel	United States
2563		do	Mixed iron and steel	United States
2564		do	Mixed iron and steel	United States
2565		do	Mixed iron and steel	United States
2566		do	Mixed iron and steel	United States
2567		do	Mixed iron and steel	United States
2568		do	Mixed iron and steel	United States
2569		do	Mixed iron and steel	Continent of Europe
2570		do	Mixed iron and steel	Continent of Europe
2571		do	Mixed iron and steel	Continent of Europe
2572		do	Mixed iron and steel	Great Britain
2573		do	Mixed iron and steel	Great Britain
2574	17	Puddlers, boss	Muck bar iron	United States
2575		do	Mixed iron and steel	United States
2576		do	Mixed iron and steel	United States
2577	7	Puddlers and puddlers' helpers	Muck bar iron	United States
2578		do	Mixed iron and steel	United States
2579	7	Puddlers' helpers	Muck bar iron	United States
2580	9	do	Muck bar iron	United States
2581	17	do	Muck bar iron	United States
2582	26	do	Muck bar iron	United States
2583		do	Mixed iron and steel	United States
2584		do	Mixed iron and steel	United States
2585		do	Mixed iron and steel	United States
2586		do	Mixed iron and steel	United States
2587		do	Mixed iron and steel	United States
2588		do	Mixed iron and steel	United States
2589		do	Mixed iron and steel	United States
2590		do	Mixed iron and steel	United States
2591		Puddlers' helper and rougher	Mixed iron and steel	Continent of Europe
2592		Puddlers' helper and rougher up	Mixed iron and steel	United States
2593		Puddlers' helper and shearman's helper	Mixed iron and steel	United States
2594	7	Pullers at squeezers	Muck bar iron	United States
2595	7	Pullers-down	Steel ingots	United States
2596		do	Mixed iron and steel	United States
2597		Pullers-out	Mixed iron and steel	United States
2598		Puller-out and rougher	Mixed iron and steel	United States
2599		Pullers-over	Mixed iron and steel	United States
2600		Pullers-up	Mixed iron and steel	Great Britain
2701		do	Mixed iron and steel	United States
2702		do	Mixed iron and steel	United States
2703		do	Mixed iron and steel	United States
2704		do	Mixed iron and steel	Great Britain
2705	8	Pullers-up (boys)	Finished bar iron	United States
2706		do	Mixed iron and steel	United States
2707		Pump rollers	Steel blooms	United States
2708	1	Pumpmen	Steel ingots	United States
2709	5	do	Steel ingots	United States
2710		do	Mixed iron and steel	United States
2711		do	Mixed iron and steel	Continent of Europe
2712	26	do	Bituminous coal	United States
2713	107	do	Bituminous coal	United States
2714		do	Bituminous coal	United States
2715		do	Bituminous coal	United States
2716		do	Bituminous coal	United States
2717	144	do	Bituminous coal	Dominion of Canada

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.)

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employees.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
93	90.484	1	92	92	844	844	1.00	844	2650
305	.444	1	92	92	309	137	0.85	162	2651
78	.514	18	1,021	64	528	33	13.09	40	2652
251	2.024	3	286	129	1,167	269	1.54	759	2653
48	.44	7	286	41	126	18	5.00	21	2654
251	1.514	5	206	69	451	90	1.19	390	2655
813	1.474	1	118	118	221	221	0.88	566	2656
143	3.904	53	2,600	60	11,639	190	20.29	544	2657
206	3.84	11	2,602	227	9,708	483	8.75	1,110	2658
280	3.39	104	9,893	95	33,513	332	34.58	870	2659
280	2.07	55	8,550	156	20,262	477	29.93	878	2660
313	(a)	67	(a)	(a)	18,373	274	(a)	(a)	2661
256	(a)	17	(a)	(a)	19,630	1,173	(a)	(a)	2662
256	1.87	81	9,638	119	18,003	222	33.70	534	2663
313	4.084	14	2,021	144	8,251	368	6.46	1,276	2664
287	3.40	100	14,746	135	50,137	460	51.38	976	2665
104	(a)	5	(a)	(a)	2,108	422	(a)	(a)	2666
313	(a)	18	(a)	(a)	15,402	856	(a)	(a)	2667
77	1.09	11	851	50	702	64	8.45	83	2668
313	.924	213	45,154	212	41,693	196	144.27	289	2669
79	1.18	45	2,015	45	2,377	53	25.50	93	2670
48	(a)	67	(a)	(a)	2,377	42	(a)	(a)	2671
156	1.44	12	1,456	122	2,090	175	9.35	295	2672
288	3.434	1	193	193	650	650	0.67	977	2673
204	2.204	2	608	208	1,320	660	2.09	631	2674
287	3.80	1	278	278	1,074	1,074	0.96	1,117	2675
143	2.054	2	194	97	515	258	1.35	380	2676
313	(a)	12	(a)	(a)	1,729	144	(a)	(a)	2677
313	3.204	1	204	204	654	654	0.65	1,003	2678
143	1.814	86	2,245	40	4,145	74	15.70	264	2679
286	2.38	17	3,153	185	7,506	442	11.03	881	2680
286	2.11	104	9,841	95	20,429	200	34.53	603	2681
276	1.264	110	17,094	155	21,007	196	50.66	262	2682
313	(a)	123	(a)	(a)	9,744	79	(a)	(a)	2683
280	(a)	37	(a)	(a)	11,412	423	(a)	(a)	2684
284	1.134	61	9,645	119	10,965	135	33.73	325	2685
313	2.17	19	2,100	111	4,561	240	6.70	680	2686
287	2.10	100	14,746	135	38,566	284	51.38	203	2687
168	(a)	5	(a)	(a)	650	132	(a)	(a)	2688
313	(a)	16	(a)	(a)	2,590	533	(a)	(a)	2689
77	.844	1	396	57	834	48	3.14	65	2690
313	(a)	1	(a)	(a)	32	32	(a)	(a)	2691
312	2.23	1	60	60	189	189	0.27	608	2692
312	1.54	1	74	74	114	114	0.24	492	2693
143	1.354	7	178	25	237	34	1.22	194	2694
230	1.624	6	257	43	418	70	1.11	274	2695
313	1.63	10	1,898	189	3,074	307	8.03	516	2696
312	1.43	9	1,122	125	1,803	178	3.86	447	2697
313	1.77	1	183	183	271	271	0.49	554	2698
53	.67	2	99	50	56	28	1.67	30	2699
313	1.204	4	670	167	751	180	2.00	377	2700
287	1.23	3	190	63	190	66	0.56	857	2701
313	.75	5	630	130	487	97	2.09	235	2702
48	.364	10	368	37	126	14	7.62	18	2703
53	.39	6	265	44	104	17	8.00	21	2704
229	.30	3	831	184	163	55	1.44	90	2705
287	.48	6	537	90	278	43	1.67	148	2706
230	1.60	2	474	237	777	389	2.06	377	2707
313	1.60	3	403	201	640	315	1.24	505	2708
132	1.50	5	500	40	301	60	1.52	190	2709
313	2.824	2	8	4	13	7	0.03	509	2710
313	.46	5	1,267	253	565	117	4.05	145	2711
312	1.334	1	3	3	4	4	0.01	417	2712
313	1.60	2	54	27	54	27	0.17	313	2713
313	1.38	1	10	10	13	13	0.03	467	2714
313	1.124	2	407	203	525	263	1.49	352	2715
313	1.50	6	681	114	1,064	177	2.19	489	2716
313	1.25	1	216	216	427	427	1.01	423	2717

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

OFFICE OF THE COMMISSIONER OF LABOR.

== SUMMARY OF ACTUAL AND THEORETICAL

... IN AN OCCUPATION. In a like occupation the facts for
... to the cost of production present
... to those on production by means of

[illegible]

TIME AND EARNINGS BY OCCUPATIONS—Continued.

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Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employées.	Days of work done.		Earnings.		Necessary employées.		Consequent average earnings per employé.
			Total.	Average.	Total.	Average.			
77	\$0.50	2	119	75	\$63	\$44	1.84	345	2717
213	1.75	2	250	125	450	225	0.80	563	2718
213	1.80	2	672	336	1,223	612	2.15	571	2719
213	1.25	4	434	109	329	122	1.39	382	2721
213	1.80	7	1,164	166	2,168	310	2.72	543	2722
213	.97	1	129	129	126	126	0.41	306	2723
213	.80	19	749	39	601	32	2.24	231	2724
213	1.53	5	547	109	1,057	211	1.75	606	2725
155	1.77	23	690	30	706	21	2.58	182	2726
44	.56	20	910	46	531	27	18.90	28	2727
53	.63	4	188	47	116	29	2.55	39	2728
155	1.73	1	48	48	83	83	0.31	209	2729
155	2.21	3	95	48	212	106	8.73	202	2730
220	3.11	2	360	180	1,120	560	1.57	716	2731
156	.97	2	132	66	128	64	0.85	151	2732
213	1.10	1	265	265	225	225	0.68	344	2733
213	1.35	2	321	160	225	112	1.06	425	2734
155	2.15	2	186	93	401	200	1.41	263	2735
220	2.08	1	101	101	210	210	0.44	478	2736
155	2.54	2	32	17	84	42	0.25	296	2737
220	1.09	1	89	89	175	175	0.39	452	2738
78	.81	23	1,289	51	789	32	16.48	48	2739
213	2.00	1	297	297	504	504	0.65	626	2740
44	.25	1	4	4	1	1	0.68	12	2741
155	2.28	9	854	95	1,931	215	6.47	230	2742
220	2.45	11	1,480	132	3,558	323	0.30	564	2743
27	.62	4	64	16	40	10	2.37	17	2744
155	1.07	1	101	101	100	100	0.77	221	2745
150	1.68	1	223	223	375	375	0.57	387	2746
230	.98	1	20	20	18	18	0.09	297	2747
213	1.56	2	352	176	524	262	1.12	470	2748
82	.62	4	309	77	166	42	2.26	49	2749
44	.62	1	53	53	33	33	1.10	30	2750
213	1.66	1	352	352	563	563	1.12	801	2751
234	2.25	1	4	4	9	9	0.91	732	2752
230	.50	1	204	204	510	510	0.49	675	2753
82	.53	3	65	21	83	11	0.68	48	2754
213	1.50	1	292	292	437	437	0.93	468	2755
213	(a)	2	(a)	(a)	167	84	(a)	(a)	2756
213	1.16	9	1,252	130	1,459	162	4.00	305	2757
213	1.75	2	62	17	91	20	8.16	518	2758
202	1.60	2	183	87	290	145	0.96	314	2759
213	1.60	1	66	66	112	112	0.21	531	2760
91	1.61	27	1,455	54	2,233	87	15.08	147	2761
91	1.57	12	894	75	1,175	96	8.23	120	2762
91	.48	4	209	75	153	38	3.36	46	2763
154	1.52	10	1,611	163	2,478	248	10.23	210	2764
213	2.00	2	518	259	1,026	513	1.65	626	2765
213	2.00	3	216	72	427	142	0.89	619	2766
213	2.02	3	381	127	709	236	1.21	632	2767
91	(a)	1	(a)	(a)	70	70	(a)	(a)	2768
213	(a)	0	(a)	(a)	223	25	(a)	(a)	2769
213	1.23	2	522	261	642	321	1.67	285	2770
156	.95	2	207	154	292	146	1.97	148	2771
152	2.94	0	636	89	1,573	282	4.06	244	2772
152	3.07	1	127	127	505	505	0.90	525	2773
90	.73	1	123	123	90	90	1.21	72	2774
90	.60	2	204	88	203	87	2.07	64	2775
213	.48	8	1,516	190	725	92	4.84	152	2776
213	0.00	1	31	31	180	180	0.10	1,006	2777
209	3.00	1	202	202	605	605	0.68	896	2778
213	5.00	1	118	118	687	687	0.47	1,070	2779
213	4.00	1	222	222	890	890	0.71	1,235	2780
213	6.35	2	377	189	2,394	1,197	1.20	1,949	2781
213	6.71	1	313	313	2,100	2,100	1.00	2,100	2782
207	8.50	1	281	281	2,264	2,264	0.98	2,445	2783
166	(a)	1	(a)	(a)	308	308	(a)	(a)	2784

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one of which cannot be compared with those for another (except as to daily rate of pay), unless then, Table I in XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employees.	Days of work done.		Earnings.		Necessary employees.		Consequent average earnings per employé.
			Total	Average.	Total	Average.			
155	\$3.52	2	229	115	\$408	\$404	1.48	347	2786
212	4.87	1	218	218	1,548	1,548	1.02	1,524	2798
213	3.25	2	596	298	1,911	957	1.86	1,022	2781
32	.80	5	341	68	207	61	2.71	87	2774
48	.66	6	213	41	180	27	6.96	22	2788
53	.79	9	453	50	318	35	8.53	37	2794
92	.21	1	75	75	17	17	0.82	21	2791
313	1.40	1	148	148	209	209	0.47	442	2795
53	.36	4	180	47	6	17	3.51	19	2795
143	3.19	2	162	81	517	259	1.13	456	2794
266	4.29	2	446	223	1,015	957	1.56	1,227	2794
266	7.06	2	596	298	2,104	1,052	1.04	2,019	2794
266	5.00	2	406	203	2,070	1,035	1.42	1,420	2794
299	4.20	5	1,270	255	5,472	1,094	4.27	1,262	2794
280	10.77	2	447	224	4,816	2,408	1.56	3,061	2794
90	2.38	2	908	47	1,649	206	7.93	234	2800
132	5.18	2	300	150	1,016	518	1.52	684	2801
230	7.41	2	419	210	3,104	1,552	1.82	1,704	2807
77	1.27	7	473	68	604	86	0.17	243	2807
78	2.05	3	190	63	400	135	2.54	160	2807
313	5.31	8	1,247	156	8,629	828	3.96	1,662	2807
286	7.11	8	1,010	126	7,190	898	3.54	2,053	2807
266	(a)	4	(a)	(a)	2,995	749	(a)	(a)	2807
213	7.01	12	1,611	174	11,302	912	5.15	2,196	2807
247	7.39	10	2,308	237	17,504	1,750	8.24	2,121	2807
168	(a)	2	(a)	(a)	3,021	1,811	(a)	(a)	2810
155	6.04	6	873	63	2,765	278	2.43	936	2811
213	(a)	8	(a)	(a)	8,431	1,405	(a)	(a)	2815
212	5.57	8	1,183	193	0,605	1,101	3.79	1,745	2815
77	.85	9	829	59	450	50	0.87	66	2815
213	.66	23	5,960	234	3,000	150	18.72	209	2815
92	.87	31	1,034	63	1,027	62	21.23	77	2815
213	.84	2	902	301	797	266	2.48	277	2815
79	1.29	15	991	66	1,262	85	12.55	102	2815
48	(a)	14	(a)	(a)	729	57	(a)	(a)	2815
156	3.29	25	2,053	122	10,000	403	19.00	514	2815
53	(a)	18	(a)	(a)	1,049	70	(a)	(a)	2823
299	17.91	1	392	392	5,230	5,230	0.06	5,255	2823
77	2.28	3	206	69	471	157	2.64	176	2823
286	(a)	12	(a)	(a)	12,800	1,067	(a)	(a)	2823
313	(a)	60	(a)	(a)	76,781	1,280	(a)	(a)	2823
912	2.30	1	206	206	681	681		1,023	2823
213	2.48	1	252	252	625	625	0.81	776	2823
266	1.39	4	892	223	1,238	310	3.12	397	2823
299	2.00	1	271	271	541	541	0.91	507	2823
256	2.50	2	670	223	1,075	568	2.34	715	2823
(a)	1.47	24	3,044	50	4,362	128	30.75	147	2831
77	.74	2	109	63	141	47	2.47	57	2831
78	1.54	4	92	23	148	27	1.16	124	2831
266	2.56	2	260	130	650	325	0.91	715	2831
313	2.00	7	1,122	162	2,370	339	3.02	653	2831
164	(a)	8	(a)	(a)	10,632	1,320	(a)	(a)	2836
135	2.31	2	131	44	303	101	0.85	250	2837
212	2.49	2	611	276	1,440	720	1.03	907	2837
213	.80	3	922	307	531	184	2.95	187	2838
48	.65	1	42	42	27	27	0.88	31	2840
156	(a)	(b)	(a)	(a)	10,047	(b)	(a)	(a)	2841
99	.47	12	1,109	83	527	41	11.17	47	2841
135	2.40	2	118	59	264	142	0.76	373	2842
212	1.37	1	79	79	100	100	0.25	423	2844
312	1.04	2	242	121	469	235	0.77	607	2845
143	2.57	6	396	66	1,015	170	2.77	388	2846
266	2.32	2	204	149	901	405	1.04	950	2847
266	2.50	2	406	203	1,015	508	1.42	715	2846
299	3.33	17	2,144	179	7,184	896	7.17	966	2846
266	3.04	2	1,781	223	6,376	622	6.24	1,034	2846
78	1.54	14	450	35	737	54	6.28	121	2846

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.
b Number of employees not given.

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless from Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
212	(a)	25	(a)	(a)	85,103	■	(a)	2852	
226	(a)	18	(a)	(a)	5,137	285	(a)	2853	
213	91.02	22	1,010	73	0,482	285	5.14	2854	
287	3.11	19	4,248	228	13,214	734	14.80	2855	
160	(a)	7	(a)	(a)	1,013	144	(a)	2856	
155	2.47	13	683	45	1,441	111	2.78	2857	
213	(a)	2	(a)	(a)	1,321	611	(a)	2858	
213	2.68	6	1,173	196	2,144	624	2.78	2859	
213	1.04	15	4,071	271	4,229	282	12.00	2860	
212	1.06	10	5,299	379	6,882	367	16.93	2861	
46	(a)	25	(a)	(a)	834	33	(a)	2862	
155	1.97	1	68	68	134	134	0.44	2863	
155	1.81	2	73	37	123	66	0.47	2864	
226	(a)	1	(a)	(a)	67	67	(a)	2865	
226	1.50	2	310	155	455	223	1.08	2866	
226	1.72	7	139	20	230	34	0.46	2867	
212	54	1	326	326	176	176	1.04	2868	
226	4.08	4	508	128	2,062	518	1.77	2869	
213	3.78	12	1,461	121	5,568	464	4.70	2870	
155	2.83	2	160	80	470	157	1.03	2871	
213	2.85	2	464	232	1,324	662	1.48	2872	
213	3.00	2	446	223	1,337	669	1.42	2873	
226	2.60	1	285	285	742	742	0.95	2874	
226	(a)	7	(a)	(a)	3,324	475	(a)	2875	
213	3.42	19	1,437	115	0,294	323	5.67	2876	
155	2.84	6	220	37	613	96	1.42	2877	
213	2.44	2	505	253	1,254	627	1.61	2878	
155	1.83	1	81	81	134	134	0.52	2879	
212	2.80	10	621	62	1,468	146	1.90	2880	
77	1.54	4	219	55	114	29	2.84	2881	
78	1.09	4	396	74	823	81	2.78	2882	
155	2.50	1	183	183	279	279	0.90	2883	
212	1.70	1	20	20	34	34	6.06	2884	
212	1.68	1	25	25	48	48	0.66	2885	
213	2.42	2	131	66	318	159	0.42	2886	
78	1.90	2	190	95	171	87	2.44	2887	
63	(a)	6	(a)	(a)	193	32	(a)	2888	
265	1.55	6	456	76	030	117	1.23	2889	
265	1.23	7	1,080	154	1,333	190	2.96	2890	
212	1.01	1	90	90	62	62	0.79	2891	
265	1.61	2	312	156	190	95	0.68	2892	
213	1.80	4	839	210	901	75	2.68	2893	
265	1.50	1	242	242	363	363	0.66	2894	
125	1.73	1	152	152	94	94	0.96	2895	
184	1.10	2	290	145	319	160	1.58	2896	
48	1.42	2	86	43	37	19	1.77	2897	
92	1.10	15	570	38	110	7	0.20	2898	
77	1.85	1	67	67	57	57	0.87	2899	
78	1.85	4	268	67	184	46	3.44	2900	
287	1.58	6	1,136	189	1,796	299	3.08	2901	
212	1.61	2	900	302	569	196	2.60	2902	
212	1.50	2	707	354	421	211	2.26	2903	
44	1.64	4	164	41	103	26	2.42	2904	
53	1.75	2	125	63	94	47	2.26	2905	
91	1.00	1	87	87	71	71	0.74	2906	
265	1.00	12	3,061	255	6,306	525	10.85	2907	
184	1.50	1	178	178	80	80	0.97	2908	
212	1.80	7	239	34	189	27	0.74	2909	
212	1.80	14	2,394	170	2,108	151	7.62	2910	
212	1.37	25	856	34	1,177	47	5.74	2911	
212	1.00	1	91	91	164	164	0.29	2912	
212	1.81	2	265	133	400	200	0.66	2913	
156	2.08	4	481	120	1,003	251	2.00	2914	
160	1.02	4	540	135	534	139	3.40	2915	
160	(a)	7	(a)	(a)	6,496	928	(a)	2916	
53	1.28	1	48	48	14	14	0.91	2917	
213	(a)	1	(a)	(a)	234	234	(a)	2918	

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Marginal number.	Establishment number.	Occupation.	Industry.	Locality.
2310		Scrap pile—concluded	Mixed iron and steel	United States
2320		do	Mixed iron and steel	United States
2321		Scrap piler and scrapper	Mixed iron and steel	United States
2322	7	Scrap stockers	Steel ingots	United States
2323	7	Scrap stockers and scrappers	Steel ingots	United States
2324		Scrap unloaders	Mixed iron and steel	United States
2325	7	Scrap wheelers	Steel ingots	United States
2326		do	Steel blooms	United States
2327		do	Mixed iron and steel	United States
2328		Scrap wheelers and abearmen's helpers	Steel blooms	United States
2329	55	Scrapers	Pig iron	Northern district, U. S.
2330	8	do	Finished bar iron	United States
2331		do	Mixed iron and steel	United States
2332		do	Mixed iron and steel	United States
2333		do	Mixed iron and steel	United States
2334	10	Scrapmen	Pig iron	Northern district, U. S.
2335	23	do	Pig iron	Northern district, U. S.
2336	23	do	Pig iron	Southern district, U. S.
2337	101	do	Pig iron	Southern district, U. S.
2338	1	do	Steel ingots	United States
2339	1	Scrapmen and unloaders	Steel ingots	United States
2340	1	Scrapmen and water carriers	Steel ingots	United States
2341	9	Scrapers	Muck bar iron	United States
2342	7	do	Steel ingots	United States
2343		do	Mixed iron and steel	United States
2344		Scrapper and scrappers' helper	Mixed iron and steel	United States
2345	9	Scrapers' helpers	Muck bar iron	United States
2346		do	Mixed iron and steel	United States
2347	1	Screeners	Steel ingots	United States
2348	143	do	Bituminous coal	Dominion of Canada
2349	170	do	Bituminous coal	Great Britain
2350		Screw setters	Mixed iron and steel	Continent of Europe
2351		Screwmen	Steel billets	United States
2352		Scull breakers	Steel blooms	United States
2353		Servants	Steel rails	Continent of Europe
2354	170	Shaftman	Bituminous coal	Great Britain
2355		Shape hammerman	Mixed iron and steel	United States
2356		Shape hammerman's helpers	Mixed iron and steel	United States
2357		Shear boys	Mixed iron and steel	Continent of Europe
2358	8	Shearman	Finished bar iron	United States
2359		do	Steel blooms	United States
2360		do	Steel blooms	United States
2361		do	Steel rails	Continent of Europe
2362		do	Mixed iron and steel	United States
2363		do	Mixed iron and steel	United States
2364		do	Mixed iron and steel	United States
2365		do	Mixed iron and steel	United States
2366		do	Mixed iron and steel	United States
2367		do	Mixed iron and steel	United States
2368		do	Mixed iron and steel	Continent of Europe
2369		do	Mixed iron and steel	Continent of Europe
2370		do	Mixed iron and steel	Continent of Europe
2371		do	Mixed iron and steel	Great Britain
2372		do	Mixed iron and steel	Great Britain
2373		Shearman and abearmen's helpers	Mixed iron and steel	United States
2374		do	Mixed iron and steel	United States
2375		do	Mixed iron and steel	United States
2376	9	Shearman's helpers	Finished bar iron	United States
2377		do	Steel blooms	United States
2378		do	Steel blooms	United States
2379		do	Mixed iron and steel	United States
2380		do	Mixed iron and steel	United States
2381		do	Mixed iron and steel	Continent of Europe
2382		do	Mixed iron and steel	Continent of Europe
2383		Sheet floormen	Mixed iron and steel	United States
2384	109	Shifters	Bituminous coal	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.)

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mar- ginal num- ber.	
		Different employés.	Days of work done.		Earnings.		Necessary employés.		Consequent average earnings per em- ployé.
			Total.	Average.	Total.	Average.			
168	(a)	12	(a)	(a)	\$2,025	\$156	(a)	(a)	2819
155	\$1.07½	3	95	46	129	100	0.67	8321	2820
155	2.01	1	120	120	241	241	0.77	811	2821
220	1.80½	4	109	27	197	49	0.47	416	2822
210	2.61½	3	153	144	1,132	377	1.68	991	2823
312	(a)	(b)	(a)	(a)	2,834	(b)	(a)	(a)	2824
230	1.35	4	23	6	26	8	0.10	980	2825
132	2.18½	5	117	23	257	81	0.10	980	2826
297	1.81	1	300	300	564	568	1.36	483	2827
132	2.40½	2	111	56	207	131	0.84	318	2828
181	1.56	3	13	4	20	7	0.07	278	2829
209	1.47½	6	930	153	1,371	229	3.11	441	2830
286	1.83	4	490	123	400	193	1.71	227	2831
287	1.60	7	1,749	250	2,708	400	0.08	459	2832
312	1.60	1	118	118	117	117	0.38	310	2833
283	1.08	5	422	64	713	143	1.16	311	2834
92	1.90	1	5	5	9	9	0.03	166	2835
234	1.00	5	200	50	291	58	0.87	335	2836
194	1.15	4	361	90	415	104	1.90	212	2837
312	1.82½	43	837	20	1,624	96	2.67	371	2838
312	1.90	2	19	5	18	9	0.03	563	2839
312	1.63	3	21	7	24	11	0.07	567	2840
290	1.44	3	1,250	252	6,221	1,244	4.49	1,413	2841
220	2.58½	3	161	117	1,256	419	1.52	624	2842
155	3.30	2	61	32	217	109	0.41	629	2843
155	1.64½	1	26	26	44	44	0.17	296	2844
286	2.14½	10	2,518	252	5,403	540	0.80	614	2845
155	1.41	4	17	4	24	6	0.11	210	2846
312	1.43	2	7	4	10	5	0.03	447	2847
312	1.00	6	1,620	272	1,632	272	5.20	314	2848
91	0.60	25	2,201	63	1,437	42	24.10	90	2849
312	0.67	3	780	260	821	174	2.48	309	2850
302	1.43	5	1,110	221	2,746	549	5.50	680	2851
144	1.50	5	551	110	629	196	2.83	218	2852
79	1.29	3	107	36	81	10	1.37	52	2853
91	1.42½	1	90	90	129	129	0.99	120	2854
168	3.03½	1	164	164	1,318	1,318	0.98	1,350	2855
169	2.16½	2	232	102	690	350	1.93	364	2856
213	36	4	791	198	284	71	2.53	112	2857
296	2.80½	3	448	223	1,117	380	1.66	710	2858
132	1.80½	2	317	169	645	422	1.64	514	2859
220	2.56½	2	364	192	2,133	1,067	1.67	1,278	2860
77	0.60	1	53	53	37	37	0.71	33	2861
312	1.39½	10	1,883	186	2,630	263	0.01	437	2862
296	2.45	25	4,092	161	3,298	296	14.81	587	2863
312	1.61½	23	2,680	100	5,954	258	11.79	566	2864
287	1.57½	8	2,510	314	2,052	464	6.78	453	2865
168	1.80	15	1,338	84	2,354	150	7.47	302	2866
312	1.46½	9	1,070	120	1,576	175	2.44	458	2867
77	0.70½	5	350	70	248	40	4.55	51	2868
312	0.51	22	4,234	190	2,216	101	7.77	160	2869
312	0.54	10	2,431	243	1,312	131	7.77	160	2870
130	3.64	7	916	135	3,249	478	0.06	553	2871
53	0.77	3	92	31	71	24	1.74	61	2872
296	(a)	(b)	(a)	(a)	2,063	(b)	(a)	(a)	2873
312	1.40½	1	178	178	263	263	0.54	408	2874
312	(a)	12	(a)	(a)	4,315	605	(a)	(a)	2875
286	1.50	4	830	222	1,322	333	2.11	439	2876
132	2.64½	11	833	76	2,204	200	6.31	249	2877
220	1.73	10	1,627	153	5,730	572	6.04	603	2878
286	1.00	1	121	121	121	121	4.42	296	2879
312	1.62½	6	1,472	243	2,247	373	4.70	474	2880
77	0.34	1	81	81	19	19	1.05	18	2881
312	0.52½	24	4,774	190	2,409	104	15.35	161	2882
312	1.50	2	449	225	673	337	1.43	400	2883
312	1.60	1	236	236	429	429	0.79	569	2884

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

b Number of employes not given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like comparison the facts for the persons are of equal length. The establishment number refers to the cost of production—percentage for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
2001		Shifters—concluded	Bituminous coal	United States
2002		Shinglers	Mixed iron and steel	United States
2003		do	Mixed iron and steel	Great Britain
2004		Shippers	Mixed iron and steel	United States
2005		do	Mixed iron and steel	United States
2006		do	Mixed iron and steel	United States
2007		do	Mixed iron and steel	United States
2008		do	Mixed iron and steel	United States
2009		do	Mixed iron and steel	United States
2010		do	Mixed iron and steel	United States
2011		Shippers' helper	Mixed iron and steel	United States
2012		Shovelers	Mixed iron and steel	United States
2013		do	Bituminous coal	United States
2014	42	Sieve men	Iron ore	United States
2015		Slag eraser men	Pig iron	Great Britain
2016		Slag haulers	Bituminous coal	United States
2017	140	do	Bituminous coal	Dominion of Canada
2018		Slag hauler and trapper	Bituminous coal	United States
2019		Slag loaders	Mixed iron and steel	Continent of Europe
2020		Slag shovelers	Bituminous coal	United States
2021		Slag shovelers and trapper	Bituminous coal	United States
2022	60	Slag wheelers	Pig iron	Continent of Europe
2023		do	Steel ingots	Continent of Europe
2024		do	Mixed iron and steel	Continent of Europe
2025		do	Mixed iron and steel	Continent of Europe
2026	41	Slagmen	Pig iron	Northern district, U. S.
2027	67	do	Pig iron	Northern district, U. S.
2028	83	do	Pig iron	Northern district, U. S.
2029	103	do	Pig iron	Northern district, U. S.
2030		do	Pig iron	Southern district, U. S.
2031		do	Pig iron	Great Britain
2032	1	do	Steel ingots	United States
2033		do	Mixed iron and steel	United States
2034		do	Mixed iron and steel	Continent of Europe
2035		do	Mixed iron and steel	Great Britain
2036		Slag pickers	Bituminous coal	United States
2037	56	do	Iron ore	United States
2038		Slaggers	Mixed iron and steel	United States
2039	1	Slagmen	Steel ingots	United States
2040		Sorters	Mixed iron and steel	Great Britain
2041	140	do	Bituminous coal	Continent of Europe
2042	156	Sorters, chief	Bituminous coal	Continent of Europe
2043	26	Spore hands	Pig iron	Great Britain
2044		do	Mixed iron and steel	Great Britain
2045		do	Mixed iron and steel	Great Britain
2046		do	Mixed iron and steel	United States
2047		do	Mixed iron and steel	Great Britain
2048	20	Stable lasses	Muck bar iron	United States
2049		do	Bituminous coal	United States
2050		do	Bituminous coal	United States
2051	43	do	Iron ore	United States
2052	43	Stable boys	Iron ore	United States
2053	61	Stablemen	Pig iron	Northern district, U. S.
2054	47	do	Pig iron	Northern district, U. S.
2055	60	do	Pig iron	Northern district, U. S.
2056	83	do	Pig iron	Northern district, U. S.
2057	84	do	Pig iron	Northern district, U. S.
2058	100	do	Pig iron	Northern district, U. S.
2059		do	Mixed iron and steel	United States
2060	146	do	Bituminous coal	Dominion of Canada
2061	156	do	Bituminous coal	Continent of Europe
2062	41	do	Iron ore	United States
2063	42	do	Iron ore	United States
2064	63	do	Iron ore	United States
2065	63	do	Iron ore	United States
2066	101	Stablemen and teamster	Pig iron	Northern district, U. S.
2067	170	Stablemen	Bituminous coal	Great Britain
2068	170	Stablemen & bulger	Bituminous coal	Great Britain
2069		Stablemen	Steel billets	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employees.	Days of work done.		Earnings.		Necessary employees.		Consequent average earnings per employee.
			Total.	Average.	Total.	Average.			
213	\$1.30	1	254	254	\$453	\$453	0.81	\$556	2085
313	(a)	2	(a)	(a)	3,349	1,675	(a)	(a)	2086
156	2.28	2	390	195	889	296	2.49	356	2087
213	1.45	9	1,715	191	2,000	222	6.44	468	2088
313	1.85	1	312	312	632	632	1.69	578	2089
213	2.30	1	317	317	728	728	1.61	719	2090
313	1.76	2	639	320	1,125	563	3.04	561	2091
156	2.46	1	155	155	540	540	1.00	540	2092
213	2.49	2	630	312	1,589	529	2.04	781	2093
165	1.66	1	14	14	23	23	0.09	256	2094
280	(a)	6	(a)	(a)	533	69	(a)	(a)	2095
156	1.37	5	199	40	273	55	1.28	213	2096
313	1.72	19	1,061	72	1,063	124	2.46	639	2097
313	1.25	4	1,253	313	1,907	482	4.20	625	2098
135	.79	1	182	182	106	106	0.99	197	2099
313	1.35	4	75	19	98	24	0.24	491	2100
313	1.10	1	211	211	224	224	0.67	332	2101
313	.94	1	38	38	36	36	0.12	297	2102
313	.90	9	1,005	212	268	41	0.09	60	2103
313	1.32	2	8	8	12	6	0.03	417	2104
313	1.00	1	2	2	2	2	0.01	313	2105
96	.67	5	272	54	184	87	3.03	61	2106
77	.83	9	174	19	142	16	6.44	23	2107
313	.43	4	1,054	264	490	115	2.37	127	2108
313	.32	1	281	281	147	147	0.90	184	2109
187	1.50	7	827	130	1,236	179	6.01	250	2110
265	1.60	6	1,583	264	2,379	420	4.34	505	2111
92	1.87	4	363	91	679	179	2.06	172	2112
265	1.15	16	1,738	108	2,004	125	4.78	421	2113
135	1.61	10	1,350	135	1,363	128	10.00	186	2114
313	1.48	3	212	71	218	106	0.68	467	2115
313	(a)	2	(a)	(a)	712	291	(a)	(a)	2116
313	.55	10	1,001	100	1,050	106	0.07	174	2117
156	.84	4	332	83	236	74	2.28	131	2118
313	1.50	1	241	241	224	224	0.77	499	2119
313	.67	1	96	96	64	64	0.31	299	2120
313	1.91	4	264	66	595	125	0.84	506	2121
313	1.35	4	243	62	313	83	0.73	420	2122
156	(a)	19	(a)	(a)	2,487	184	(a)	(a)	2123
77	.45	6	239	40	107	18	2.11	84	2124
77	.60	2	160	80	97	32	2.08	47	2125
91	.60	16	1,564	94	908	86	16.53	55	2126
48	(a)	27	(a)	(a)	727	27	(a)	(a)	2127
58	(a)	94	(a)	(a)	2,463	26	(a)	(a)	2128
313	1.25	1	118	118	148	148	0.38	339	2129
46	(a)	2	(a)	(a)	106	53	(a)	(a)	2130
313	2.14	1	14	14	80	30	0.04	671	2131
265	.98	1	305	305	360	360	1.00	360	2132
265	1.61	1	265	265	588	588	1.00	588	2133
265	1.50	1	361	361	512	512	1.00	512	2134
265	.70	3	275	128	262	67	1.03	255	2135
187	1.02	1	108	108	270	270	0.99	273	2136
265	1.31	2	339	169	431	216	0.90	478	2137
265	1.15	1	357	357	411	411	0.96	420	2138
92	1.18	1	82	82	106	106	1.00	105	2139
122	1.06	1	122	122	122	122	1.00	122	2140
265	1.07	1	290	290	320	320	0.82	394	2141
265	1.40	4	357	89	500	125	0.98	511	2142
265	1.10	2	609	305	761	381	1.89	403	2143
77	.81	5	159	32	98	20	2.08	47	2144
265	.98	1	254	254	345	345	0.97	354	2145
265	1.15	7	1,846	264	2,122	303	8.00	420	2146
313	1.24	5	162	32	178	35	0.48	328	2147
313	.70	2	372	186	235	128	1.13	215	2148
184	1.29	1	188	188	273	273	1.00	260	2149
91	.88	3	223	74	212	71	3.48	87	2150
91	.25	1	78	78	27	27	0.84	32	2151
209	2.30	2	256	128	350	283	1.78	463	2152

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

(Each line shows the total of an occupation in an establishment. In a like occupation the first for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- sh- al num- ber.	Es- ta- lish- ment num- ber.	Occupation.	Industry.	Locality.
2063		Blampers—concluded	Mixed iron and steel	United States
2064		do	Mixed iron and steel	United States
2065		do	Mixed iron and steel	Great Britain
2066		do	Mixed iron and steel	Great Britain
2067		Steel loaders	Steel blooms	United States
2068	1	Steel pourers	Steel ingots	United States
2069	7	do	Steel ingots	United States
2070		do	Steel ingots	Continent of Europe
2071		do	Steel ingots	Continent of Europe
2072		do	Steel ingots	Continent of Europe
2073		Steel pourers' help or	Steel ingots	Continent of Europe
2074	179	Steward	Bituminous coal	Great Britain
2075	8	Stickers-in	Finished bar iron	United States
2076	9	do	Finished bar iron	United States
2077		do	Mixed iron and steel	United States
2078		do	Mixed iron and steel	United States
2079		do	Mixed iron and steel	United States
2080	41	Stock breakers	Pig iron	Northern district, U. S.
2081	42	do	Pig iron	Northern district, U. S.
2082	84	do	Pig iron	Northern district, U. S.
2083	10	Stock preparers	Pig iron	Northern district, U. S.
2084		Stock taker	Mixed iron and steel	Great Britain
2085	83	Stock unloader	Pig iron	Northern district, U. S.
2086	48	Stockers	Pig iron	Northern district, U. S.
2087	103	do	Pig iron	Southern district, U. S.
2088		do	Pig iron	Continent of Europe
2089	7	do	Muck bar iron	United States
2090	9	do	Muck bar iron	United States
2091	26	do	Muck bar iron	United States
2092	1	do	Steel ingots	United States
2093	8	do	Steel ingots	United States
2094		do	Mixed iron and steel	United States
2095		do	Mixed iron and steel	United States
2096		do	Mixed iron and steel	United States
2097		do	Mixed iron and steel	United States
2098		do	Mixed iron and steel	United States
2099		do	Mixed iron and steel	United States
2100		do	Mixed iron and steel	United States
2101		do	Mixed iron and steel	Great Britain
2102		do	Mixed iron and steel	Great Britain
2103	7	Stockers, boss	Muck bar iron	United States
2104	9	do	Muck bar iron	United States
2105	26	do	Muck bar iron	United States
2106		do	Mixed iron and steel	United States
2107		do	Mixed iron and steel	United States
2108	1	Stone breaker	Steel ingots	United States
2109	1	Stone wheelers	Steel ingots	United States
2110	42	Stonecutter and whitewasher	Iron ore	United States
2111	7	Stopper carriers	Steel ingots	United States
2112	2	Stopper carriers and stopper setters	Steel ingots	United States
2113	2	Stopper carrier and vessel cinder	Steel ingots	United States
2114	7	Stopper setters	Steel ingots	United States
2115		do	Steel ingots	Continent of Europe
2116		do	Mixed iron and steel	Great Britain
2117	7	Stoppermakers	Steel ingots	United States
2118		do	Steel ingots	Continent of Europe
2119		do	Steel blooms	United States
2120		do	Mixed iron and steel	Continent of Europe
2121		do	Mixed iron and steel	Great Britain
2122		Stoppermakers' helper	Mixed iron and steel	Continent of Europe

TIME AND EARNINGS BY OCCUPATIONS—Continued.

are establishment cannot be compared with those for another (except as to daily rate of pay), unless, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employees.	Days of work done.		Earnings.		Necessary employees.		Consequent average earnings per employee.
			Total.	Average.	Total.	Average.			
185	\$0.81	2	26	13	\$31	\$11	6.16	\$130	3053
313	.67½	2	297	148	208	100	9.25	211	3054
186	.97½	2	263	131	262	131	1.72	153	3055
83	.57	1	49	49	28	28	0.92	80	3056
123	1.00	11	747	68	1,417	129	5.98	250	3057
313	3.14½	2	253	127	706	353	5.58	285	3058
290	2.57½	2	370	185	2,432	1,216	1.61	1,512	3,158
77	.86	2	204	88	178	89	2.65	68	3060
27	.91½	5	98	20	89	18	3.63	25	3061
78	.48	4	267	67	128	32	3.43	37	3062
27	.78	6	107	18	84	14	3.96	21	3063
299	2.68	1	78	78	210	210	0.86	245	3064
299	.89½	6	748	125	958	159	2.50	267	3065
286	1.50	2	447	224	671	336	1.56	429	3066
290	(a)	3	(a)	(a)	67	209	(a)	(a)	3067
313	2.25	1	66	56	125	125	0.18	999	3068
155	1.42	16	462	29	665	41	2.96	220	3069
167	1.37½	11	1,623	138	2,093	190	9.11	250	3070
365	1.45	7	2,262	323	2,364	472	6.23	828	3071
123	1.00	1	105	105	165	165	0.86	122	3072
365	1.50	80	3,061	31	4,562	47	5.36	649	3073
48	1.43	1	48	48	69	69	1.00	69	3074
79	1.40	1	26	26	28	28	0.23	111	3075
365	1.31	7	1,666	238	2,471	353	6.17	476	3076
365	1.10½	75	1,804	24	1,991	27	4.93	—	—
91	.60	18	1,252	70	754	42	13.76	65	3078
155	1.66	6	267	45	424	141	1.72	246	3079
290	1.56	2	1,333	222	2,107	251	4.06	452	3080
313	1.50	2	280	140	435	218	8.83	470	3081
313	2.11	87	2,292	62	4,658	131	7.23	961	3082
128	1.35½	16	501	38	670	49	3.80	179	3083
299	(a)	1	(a)	(a)	727	727	(a)	(a)	3084
313	1.75	1	228	228	366	366	0.76	523	3085
297	2.60	2	486	243	1,063	532	1.69	662	3086
168	1.13	4	265	66	308	77	1.35	—	3087
123	1.20	19	651	34	820	43	4.19	135	3088
313	1.42½	16	2,070	178	4,077	372	—	474	3089
313	1.48	2	538	279	625	313	1.79	463	3090
48	.61½	6	316	38	123	22	4.50	30	3091
63	(a)	84	(a)	(a)	1,784	21	(a)	(a)	3092
155	3.20	1	104	104	336	336	0.67	501	3093
296	2.27½	2	447	149	1,463	488	1.56	937	3094
313	5.56	1	180	180	960	960	0.68	1,722	3095
297	4.21½	1	268	268	1,131	1,131	0.91	1,210	3096
155	2.50	1	160	160	250	250	0.65	368	3097
313	1.06½	1	8	8	8	8	4.01	522	3098
365	1.67	2	642	321	1,071	536	1.70	699	3099
91	.27½	2	176	88	48	24	1.02	25	3100
366	1.81	31	4,035	130	6,068	260	11.04	651	3101
313	1.70½	10	1,917	192	2,479	248	6.13	403	3102
165	7.30	12	600	46	781	60	2.87	292	3103
63	.71½	61	1,962	32	1,410	23	57.40	38	3104
313	1.82½	1	148	148	272	272	0.46	571	3105
313	1.76½	2	235	118	418	210	0.75	558	3106
313	1.61	1	204	204	473	473	0.94	504	3107
220	5.05	2	368	185	1,863	932	1.08	1,161	3108
123	3.45½	5	417	83	1,441	288	3.16	456	3109
123	2.94½	1	85	85	380	380	0.72	389	3110
220	5.08	2	368	181	1,874	937	1.60	1,171	3111
27	.30	8	139	23	29	7	4.77	8	3112
63	.82½	2	174	88	56	19	3.28	17	3113
220	3.09½	1	288	288	604	604	1.25	462	3114
27	.66½	3	24	12	16	8	0.89	18	3115
123	2.00	1	123	123	237	237	0.93	276	3116
313	.67½	1	316	316	214	214	1.01	212	3117
58	(a)	(b)	(a)	(a)	303	(b)	(a)	(a)	3118
313	.40½	1	280	280	138	138	0.69	154	3119

• Paid by the quantity. The daily rate of pay and days of work done cannot be given.

• Number of employees not given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
3120	10	Storekeepers	Pig iron	Northern district, U. S.
3121	54	do	Pig iron	Northern district, U. S.
3122	101	do	Pig iron	Southern district, U. S.
3123	79	do	Finished bar iron	Great Britain
3124	1	do	Steel ingots	United States
3125	do	do	Steel billets	United States
3126	do	do	Mixed iron and steel	United States
3127	do	do	Mixed iron and steel	Continent of Europe
3128	148	Storekeeper and timekeeper	Bituminous coal	Dominion of Canada
3129	do	Storekeepers' helper	Steel billets	United States
3130	26	Store cleaners	Pig iron	Great Britain
3131	37	do	Pig iron	Great Britain
3132	0	Store tenders	Pig iron	Northern district, U. S.
3133	42	do	Pig iron	Northern district, U. S.
3134	do	do	Pig iron	Great Britain
3135	16	Stovemans	Pig iron	Northern district, U. S.
3136	23	do	Pig iron	Northern district, U. S.
3137	42	do	Pig iron	Northern district, U. S.
3138	22	do	Pig iron	Northern district, U. S.
3139	67	do	Pig iron	Northern district, U. S.
3140	85	do	Pig iron	Southern district, U. S.
3141	101	do	Pig iron	Northern district, U. S.
3142	100	do	Pig iron	Southern district, U. S.
3143	do	do	Pig iron	Continent of Europe
3144	10	Stovemans' helper	Pig iron	Northern district, U. S.
3145	8	Straighteners	Finished bar iron	United States
3146	9	do	Finished bar iron	United States
3147	29	do	Finished bar iron	Great Britain
3148	do	do	Steel rails	Continent of Europe
3149	do	do	Mixed iron and steel	United States
3150	do	do	Mixed iron and steel	United States
3151	do	do	Mixed iron and steel	United States
3152	do	do	Mixed iron and steel	United States
3153	do	do	Mixed iron and steel	United States
3154	do	do	Mixed iron and steel	United States
3155	do	do	Mixed iron and steel	Continent of Europe
3156	do	do	Mixed iron and steel	Continent of Europe
3157	do	do	Mixed iron and steel	Great Britain
3158	do	do	Mixed iron and steel	Great Britain
3159	do	Straightener and water boy	Mixed iron and steel	United States
3160	do	Straighteners and weighmen	Mixed iron and steel	Continent of Europe
3161	42	Strikers	Iron ore	United States
3162	do	Superintendents	Steel ingots	Continent of Europe
3163	do	Supervisor	Steel rails	Continent of Europe
3164	72	Surface boss	Iron ore	United States
3165	170	Surveyor, assistant	Bituminous coal	Great Britain
3166	do	Swarf wheelers	Mixed iron and steel	United States
3167	100	Sweepers	Pig iron	Southern district, U. S.
3168	38	do	Pig iron	Great Britain
3169	37	do	Pig iron	Great Britain
3170	1	do	Steel ingots	United States
3171	do	do	Steel billets	United States
3172	do	do	Mixed iron and steel	United States
3173	do	do	Mixed iron and steel	United States
3174	do	do	Mixed iron and steel	Continent of Europe
3175	do	do	Mixed iron and steel	Continent of Europe
3176	do	do	Mixed iron and steel	Great Britain
3177	do	do	Mixed iron and steel	Great Britain
3178	do	do	Mixed iron and steel	Great Britain
3179	1	Sweeper and water carrier	Steel ingots	United States
3180	do	Switchmen	Mixed iron and steel	United States
3181	do	do	Mixed iron and steel	United States
3182	do	do	Mixed iron and steel	United States
3183	do	do	Mixed iron and steel	Continent of Europe
3184	do	Table boys	Steel billets	United States
3185	do	Tablemen	Steel billets	United States
3186	do	Tableman and transmitter	Steel billets	United States
3187	17	Tap wheelers	Mixed bar iron	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless, Tables I to XL. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mac- gill num- ber.	
		Different employées.	Days of work done.		Earnings.		Necessary employées.		Consequent average earnings per em- ployée.
			Total.	Average.	Total.	Average.			
285	\$1.66	1	239	239	\$559	\$559	0.93	\$602	3120
305	1.40	1	14	14	20	20	0.04	521	3121
164	1.50	1	184	184	276	276	1.00	276	3122
96	.07	1	99	99	99	99	1.00	99	3123
313	1.84	3	402	134	688	229	1.28	514	3124
302	1.80	1	165	165	180	180	0.82	369	3125
313	1.45	1	206	206	428	428	0.94	454	3126
92	.97	2	186	92	106	53	2.00	53	3127
313	2.12	1	312	312	680	680	1.00	682	3128
202	1.40	1	73	73	102	102	0.36	282	3129
91	.61	1	101	101	61	61	1.11	55	3130
91	.61	2	174	87	108	54	1.91	55	3131
303	2.50	2	209	105	512	257	0.67	386	3132
995	2.15	2	718	357	1,533	767	1.95	758	3133
135	1.04	3	270	135	281	141	2.00	141	3134
335	2.00	1	337	337	655	655	0.93	709	3135
385	1.63	3	611	204	1,072	357	1.76	610	3136
383	1.65	2	623	312	1,010	505	1.71	682	3137
383	2.08	4	1,107	277	2,474	619	3.28	784	3138
386	1.60	2	680	340	1,062	531	1.00	530	3139
334	1.27	4	464	116	582	145	1.38	426	3140
184	1.73	0	717	80	1,256	140	3.90	322	3141
385	1.42	4	274	69	381	95	0.75	621	3142
91	.60	0	517	80	358	59	5.68	52	3143
385	1.75	1	281	281	640	640	0.96	666	3144
290	.88	12	1,668	131	1,280	108	6.34	247	3145
295	1.25	6	1,239	207	1,808	301	4.68	326	3146
90	1.21	1	127	127	184	184	1.28	130	3147
78	.50	1	2	2	1	1	0.03	39	3148
313	1.28	4	986	246	1,179	296	2.06	365	3149
286	1.70	27	1,609	60	2,742	102	6.63	467	3150
217	1.35	20	2,809	140	4,367	318	4.97	487	3151
287	.89	10	2,444	244	1,855	190	0.53	226	3152
155	1.43	14	426	31	626	45	2.61	222	3153
313	.92	20	3,019	77	2,770	71	3.66	238	3154
92	.44	75	2,212	43	1,426	19	34.91	41	3155
79	.76	8	368	46	231	25	4.66	60	3156
40	(a)	13	(a)	(a)	531	41	(a)	(a)	3157
53	(a)	12	(a)	(a)	727	61	(a)	(a)	3158
155	1.60	1	83	83	83	83	0.21	249	3159
92	.32	2	102	51	82	41	1.11	77	3160
313	1.30	24	2,714	109	4,823	162	11.87	408	3161
78	2.38	2	179	90	427	214	2.29	180	3162
78	2.12	1	46	46	87	87	0.50	184	3163
313	2.00	1	278	278	557	557	0.89	627	3164
91	1.21	1	78	78	98	98	0.86	112	3165
108	.75	3	38	13	28	9	0.23	134	3166
305	.70	9	790	88	555	62	3.17	256	3167
91	.44	4	534	84	149	37	3.67	41	3168
91	.20	2	271	90	55	18	2.90	18	3169
313	1.50	1	147	147	314	314	0.47	460	3170
302	1.46	6	124	21	180	30	0.66	296	3171
313	1.40	4	1,184	296	1,815	404	3.00	438	3172
313	1.10	4	243	61	100	25	1.10	273	3173
313	.47	3	419	140	160	60	1.34	149	3174
79	.22	2	57	28	12	12	1.43	12	3175
46	.35	2	100	50	25	12	2.08	12	3176
156	1.01	8	929	116	842	116	5.96	166	3177
54	.44	4	168	42	75	19	3.17	24	3178
313	1.44	1	9	9	12	12	0.03	453	3179
313	2.06	9	805	89	2,142	238	2.57	632	3180
313	1.91	1	117	117	222	222	0.37	507	3181
313	1.62	2	206	103	406	143	0.95	516	3182
313	.36	2	487	244	175	86	1.58	112	3183
202	1.30	4	214	54	297	74	1.66	280	3184
202	1.95	1	148	148	285	285	0.72	304	3185
202	1.83	3	83	83	161	161	0.44	270	3186
306	1.40	13	420	28	588	39	1.47	319	3187

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- gin- al num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
2188	1	Tappers, cupo's	Steel ingots	United States
2189	101	Teamsters	Pig iron	Southern district, U. S.
2190	9	do	Muck bar iron	United States
2191	26	do	Muck bar iron	United States
2192	do	do	Mixed iron and steel	United States
2193	do	do	Mixed iron and steel	United States
2194	do	do	Mixed iron and steel	United States
2195	26	do	Bituminous coal	United States
2196	do	do	Bituminous coal	United States
2197	do	do	Bituminous coal	United States
2198	12	do	Coke	United States
2199	51	do	Iron ore	United States
2200	72	do	Iron ore	United States
2201	9	Teamsters (with testas)	Pig iron	Northern district, U. S.
2202	32	do	Pig iron	Northern district, U. S.
2203	42	do	Pig iron	Northern district, U. S.
2204	48	do	Pig iron	Northern district, U. S.
2205	33	do	Pig iron	Northern district, U. S.
2206	do	do	Mixed iron and steel	United States
2207	45	do	Iron ore	United States
2208	do	Teamster and trans-road repairer	Bituminous coal	United States
2209	do	Teamster	Mixed iron and steel	Great Britain
2210	do	Telegraphmen	Steel blooms	United States
2211	do	do	Mixed iron and steel	United States
2212	2	Test boys	Steel ingots	United States
2213	7	Test catchers	Steel ingots	United States
2214	do	Test preparer	Mixed iron and steel	Great Britain
2215	do	Test preparer (boy)	Mixed iron and steel	Great Britain
2216	1	Testers	Steel ingots	United States
2217	5	do	Steel ingots	United States
2218	do	do	Steel ingots	Continent of Europe
2219	26	Timberman	Bituminous coal	United States
2220	108	do	Bituminous coal	United States
2221	do	do	Bituminous coal	United States
2222	148	do	Bituminous coal	Dom. nion of Canada
2223	170	do	Bituminous coal	Great Britain
2224	1	do	Iron ore	United States
2225	12	do	Iron ore	United States
2226	42	do	Iron ore	United States
2227	45	do	Iron ore	United States
2228	51	do	Iron ore	United States
2229	56	do	Iron ore	United States
2230	58	do	Iron ore	United States
2231	61	do	Iron ore	United States
2232	66	do	Iron ore	United States
2233	72	do	Iron ore	United States
2234	80	do	Iron ore	Continent of Europe
2235	42	Timberman, boss	Iron ore	United States
2236	72	do	Iron ore	United States
2237	9	Timekeepers	Pig iron	Northern district, U. S.
2238	10	do	Pig iron	Northern district, U. S.
2239	41	do	Pig iron	Northern district, U. S.
2240	58	do	Pig iron	Northern district, U. S.
2241	1	do	Steel ingots	United States
2242	do	do	Mixed iron and steel	United States
2243	do	do	Mixed iron and steel	United States
2244	do	do	Mixed iron and steel	United States
2245	do	do	Mixed iron and steel	Great Britain
2246	72	do	Iron ore	United States
2247	58	Timekeeper and number taker	Pig iron	Great Britain
2248	do	Timekeeper and yardmaster	Mixed iron and steel	United States
2249	do	Tipplers	Pig iron	Great Britain
2250	do	do	Mixed iron and steel	Great Britain
2251	98	Tipplemen	Bituminous coal	United States
2252	107	do	Bituminous coal	United States
2253	do	Tongmen	Steel billets	United States
2254	do	do	Mixed iron and steel	Great Britain
2255	do	do	Mixed iron and steel	Great Britain
2256	do	Tongmen and transmitters	Steel billets	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.)

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employ. ea.	Days of work done.		Earnings.		Necessary employea.		Consequent average earnings per employe.
			Total.	Average.	Total.	Average.			
313	\$2.06	4	490	125	\$1,530	\$383	1.60	3000	3288
184	1.01	10	518	52	825	53	2.20	167	3180
313	1.83	2	380	180	480	240	1.15	418	3190
312	1.63	3	27	12	60	20	0.13	508	3191
313	1.26	1	313	313	301	301	1.00	301	3192
313	1.27	4	424	106	540	135	1.35	390	3193
313	1.41	13	793	61	1,117	86	2.53	441	3194
313	1.21	2	127	64	154	77	0.41	390	3195
313	1.50	1	300	300	450	450	0.06	470	3196
313	1.28	23	802	29	1,144	39	2.84	3107	3197
313	1.25	2	858	179	482	241	1.14	421	3198
313	1.00	4	403	116	463	116	1.48	313	3199
313	2.12	3	417	140	947	316	1.43	003	3200
313	5.23	3	296	99	1,551	517	0.85	1,640	3201
313	2.40	1	9	9	21	21	0.03	720	3202
312	3.00	2	146	73	438	218	0.47	935	3203
313	2.13	2	46	23	144	72	0.15	960	3204
79	3.00	2	151	50	453	151	1.91	337	3205
313	3.00	3	444	222	1,314	457	1.42	926	3206
313	2.00	4	58	15	173	43	0.19	031	3207
313	1.28	1	4	4	5	5	0.01	301	3208
156	(a)	1	(a)	(a)	55	55	(a)	(a)	3209
220	3.65	2	178	89	631	315	0.77	841	3210
313	1.60	11	1,309	119	2,363	215	4.18	508	3211
132	1.80	4	142	36	228	57	1.08	216	3212
220	1.55	4	911	128	797	199	2.22	359	3213
156	1.93	1	167	167	185	185	1.07	145	3214
156	1.73	1	170	170	129	129	1.09	118	3215
313	7.00	1	29	29	140	140	0.06	2,181	3216
132	1.64	1	81	81	125	125	0.61	204	3217
77	2.67	1	43	43	37	37	0.56	06	3218
313	2.04	3	450	56	920	115	1.44	840	3219
212	2.00	1	379	379	568	568	0.89	637	3220
313	(a)	23	(a)	(a)	3,317	144	(a)	(a)	3221
313	1.35	31	6,291	203	4,538	275	20.11	423	3222
91	1.08	2	159	80	172	86	1.75	96	3223
313	1.86	13	1,230	97	2,344	182	4.03	853	3224
313	2.07	2	552	184	1,143	381	1.77	948	3225
313	1.35	3	675	225	766	303	1.84	428	3226
313	1.60	3	497	166	932	313	1.17	501	3227
313	1.40	3	226	128	353	177	1.17	433	3228
313	1.28	1	175	175	217	217	0.56	388	3229
312	1.05	1	253	253	264	264	0.81	326	3230
155	1.25	1	104	104	135	135	0.70	194	3231
313	1.50	1	24	24	37	37	0.08	443	3232
313	2.03	23	1,216	53	2,477	113	2.80	638	3233
156	7.10	1	150	150	111	111	0.39	112	3234
312	2.00	1	273	273	545	545	0.67	825	3235
313	2.80	1	310	310	868	868	1.02	874	3236
365	2.46	1	92	92	225	225	0.25	883	3237
365	1.62	1	335	335	510	510	0.92	556	3238
167	1.63	1	167	167	273	273	1.00	273	3239
313	2.80	1	312	312	900	900	1.00	903	3240
365	2.68	1	327	327	844	844	0.90	943	3241
135	2.40	1	27	27	63	63	0.17	372	3242
313	2.00	1	211	211	426	426	0.67	632	3243
313	2.50	2	612	311	1,500	780	1.90	783	3244
46	1.62	1	48	48	78	78	1.00	78	3245
313	2.05	2	311	156	618	309	0.99	643	3246
91	1.72	1	81	81	60	60	1.00	60	3247
135	2.32	1	153	153	300	300	1.00	300	3248
135	1.93	1	1,246	128	1,157	119	0.23	128	3249
52	(a)	1	(a)	(a)	76	76	(a)	(a)	3250
313	1.50	10	379	38	268	57	1.21	460	3251
313	1.23	11	727	66	907	82	2.33	390	3252
292	2.37	8	412	52	983	120	2.04	473	3253
156	1.11	1	124	124	147	147	0.79	173	3254
53	(a)	4	(a)	(a)	196	70	(a)	(a)	3255
292	2.23	2	160	80	361	181	0.79	466	3256

a Paid by the quantity. The daily rate of pay and days of work done cannot be given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
3287	48	Tool boys	Iron ore	United States
3288	7	Toolmen	Machine bar iron	United States
3289	13	Tracklayers	Bituminous coal	United States
3290	36	do	Bituminous coal	United States
3291	56	do	Bituminous coal	United States
3292		do	Bituminous coal	United States
3293		do	Bituminous coal	United States
3294		Tracklayer and trapper	Bituminous coal	United States
3295	67	Trackmen	Pig iron	United States
3296		do	Mixed iron and steel	Northern district, U. S.
3297	100	do	Bituminous coal	United States
3298	73	do	Iron ore	United States
3299		Track-road repairers	Bituminous coal	United States
3300		Tramways	Bituminous coal	United States
3301	1	do	Iron ore	United States
3302	73	do	Iron ore	United States
3303	1	Transformers	Steel ingots	United States
3304		do	Steel billets	United States
3305		Transmitters, cast	Steel billets	United States
3306		Transmitters, hook	Steel billets	United States
3307		Transmitters, hydraulic	Steel billets	United States
3308		Transportmen	Mixed iron and steel	Continent of Europe
3309	18	Trappers	Bituminous coal	United States
3310	29	do	Bituminous coal	United States
3311	35	do	Bituminous coal	United States
3312	96	do	Bituminous coal	United States
3313	100	do	Bituminous coal	United States
3314		do	Bituminous coal	United States
3315		do	Bituminous coal	United States
3316		do	Bituminous coal	United States
3317		do	Bituminous coal	United States
3318		do	Bituminous coal	United States
3319	148	do	Bituminous coal	Dominion of Canada
3320	170	do	Bituminous coal	Great Britain
3321	13	Trimmers	Bituminous coal	United States
3322	36	do	Bituminous coal	United States
3323	55	do	Bituminous coal	United States
3324	96	do	Bituminous coal	United States
3325		do	Bituminous coal	United States
3326		do	Bituminous coal	United States
3327		do	Bituminous coal	United States
3328	73	do	Iron ore	United States
3329		Trimmer, boss	Bituminous coal	United States
3330	1	Truckmen	Iron ore	United States
3331	43	do	Iron ore	United States
3332	66	do	Iron ore	United States
3333	56	do	Iron ore	United States
3334	61	do	Iron ore	United States
3335		Turbine men	Steel rails	Continent of Europe
3336		Turn-overs	Mixed iron and steel	Great Britain
3337		Turners	Mixed iron and steel	Continent of Europe
3338		do	Mixed iron and steel	Continent of Europe
3339		do	Mixed iron and steel	Continent of Europe
3340		Turners' helpers	Mixed iron and steel	Continent of Europe
3341		Tuyère fitter	Pig iron	Great Britain
3342	56	Unloaders	Pig iron	Northern district, U. S.
3343	1	do	Steel ingots	United States
3344		do	Mixed iron and steel	United States
3345		do	Mixed iron and steel	Great Britain
3346	2	Vessel cinders	Steel ingots	United States
3347	2	Vessel repairers	Steel ingots	United States
3348	7	do	Steel ingots	United States
3349	2	Vessel scrapers	Steel ingots	United States
3350	1	Vessel tenders	Steel ingots	United States
3351	1	Vesselmen	Steel ingots	United States
3352	2	do	Steel ingots	United States
3353	7	do	Steel ingots	United States
3354		do	Steel ingots	Continent of Europe
3355		do	Mixed iron and steel	Great Britain
3356	170	Wagon builders and repairers	Bituminous coal	Great Britain
3357	170	Wagon builders and repairers	Bituminous coal	Great Britain

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.)

Working days in the period.	Actual daily earnings, or daily rate nearest to average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		Marginal number.	
		Different employees.	Days of work done.		Earnings.		Necessary employees.		Consequent average earnings per employee.
			Total.	Average.	Total.	Average.			
313	\$0.65	11	2,511	228	\$1,438	\$148	8.02	\$204	3257
155	1.37	1	115	115	158	158	0.74	371	3258
156	1.79	1	143	143	251	251	0.91	277	3259
312	2.25	2	222	111	486	243	0.71	685	3260
313	2.00	1	229	229	540	540	0.86	625	3261
313	2.08	11	656	60	1,200	124	2.00	602	3262
215	2.18	1	317	317	■	■	1.01	621	3263
312	1.50	1	0	0	0	0	0.92	470	3264
313	1.40	1	295	295	413	413	0.94	438	3265
312	1.43	1	790	133	1,141	190	2.55	447	3266
312	2.00	8	611	76	1,379	160	1.95	655	3267
312	1.93	4	431	108	831	208	1.37	603	3268
312	1.87	10	810	81	1,516	152	2.50	588	3269
312	1.65	9	69	7	39	4	0.19	302	3270
312	1.59	7	504	86	380	127	1.80	400	3271
312	1.91	94	4,212	45	8,075	80	12.47	618	3272
312	2.15	4	180	40	344	86	0.51	672	3273
202	1.65	1	23	23	37	37	0.11	325	3274
202	2.19	0	522	58	1,144	127	2.56	443	3275
202	2.46	0	535	56	835	136	1.66	497	3276
202	1.03	2	148	74	286	143	0.72	390	3277
312	1.46	■	6,411	164	2,815	72	20.48	137	■
156	1.67	2	805	153	267	134	1.03	125	3279
312	1.98	1	973	137	216	109	0.67	948	3280
312	1.40	1	44	44	19	19	0.14	135	3281
312	1.50	15	886	68	408	33	2.15	157	3282
312	1.68	13	736	57	438	34	2.35	165	3283
312	1.08	0	■	53	189	0	1.05	189	3284
312	1.80	21	1,451	67	1,165	54	4.64	251	3285
312	1.61	25	1,450	58	804	32	4.00	192	3286
312	1.40	0	803	134	330	85	2.67	120	3287
91	1.32	4	206	75	102	26	3.27	51	3288
156	1.75	1	150	150	277	277	1.01	275	3289
312	1.46	5	348	70	310	103	1.11	■	3290
312	1.46	2	338	112	496	165	1.06	650	3291
312	1.86	7	319	31	343	40	0.70	490	3292
312	1.56	4	404	101	877	157	1.29	480	3293
312	2.02	20	2,227	69	4,680	190	7.12	■	3294
312	1.88	1	372	273	512	612	0.67	580	3295
312	1.50	1	225	255	333	833	0.75	470	3296
312	1.30	8	449	75	544	91	1.45	379	3297
312	1.13	10	319	27	247	25	0.70	362	3298
312	1.83	23	2,452	111	2,291	104	7.84	293	3299
155	1.10	22	1,429	65	1,577	72	0.22	371	3300
78	1.70	0	410	68	260	48	5.25	55	3301
156	1.82	4	490	122	682	223	2.15	285	3302
312	1.71	0	1,203	200	■	156	3.61	243	3303
312	1.66	4	1,003	251	661	165	3.20	304	3304
79	1.64	2	223	74	168	49	2.62	52	3305
312	1.30	10	2,408	241	934	83	■	121	3306
126	1.03	1	188	188	193	193	■	143	3307
312 (a)	■	(b)	(a)	(a)	3,436	(b)	(a)	(a)	3308
312	1.58	11	210	20	942	21	0.00	498	3309
312 (a)	■	(a)	(a)	(a)	908	■	(a)	(a)	3310
53	1.77	1	24	24	18	18	0.45	40	3311
182	2.72	3	164	55	446	149	1.74	■	3312
132	2.40	1	32	32	77	77	0.24	510	3313
279	1.65	3	547	106	070	223	2.85	340	3314
132	2.11	0	207	41	437	87	1.57	279	3315
312	1.40	7	200	30	203	42	0.42	439	3316
312	2.87	11	1,526	144	4,569	414	6.07	000	3317
123	3.63	5	490	98	1,678	335	3.48	402	3318
230	5.22	4	657	164	2,430	608	2.63	1,201	3319
77	1.90	4	263	66	210	53	3.40	82	3320
53 (a)	■	18	(a)	(a)	919	51	(a)	(a)	3321
91	1.11	0	423	73	400	51	4.78	102	3322
91	1.51	1	77	77	40	40	0.86	47	3323

a Paid by the quantity. The daily rate of pay and days of work done can not be given.
 b Number of employees not given.

TABLE XIII.—SUMMARY OF ACTUAL AND THEORETICAL

[Each line shows the total of an occupation in an establishment. In a like occupation the facts for the periods are of equal length. The establishment numbers relate to the cost of production presented for the establishment was obtained. In referring from this table to those on production by means of

Mar- ginal num- ber.	Es- tab- lish- ment num- ber.	Occupation.	Industry.	Locality.
3324	47	Wagonmakers	Iron ore	United States
3325	29	Warehousemen	Finished bar iron	Great Britain
3326		do	Mixed iron and steel	United States
3327		do	Mixed iron and steel	Continent of Europe
3328	29	Wash heaters	Finished bar iron	Great Britain
3329		do	Mixed iron and steel	Great Britain
3330	29	Wash heaters helpers	Finished bar iron	Great Britain
3331		do	Mixed iron and steel	Great Britain
3332	26	Washermen	Iron ore	United States
3333	31	do	Iron ore	United States
3334	33	Watchmen	Pig iron	Northern district, U. S.
3335	36	do	Pig iron	Northern district, U. S.
3336	9	do	Muck bar iron	United States
3337	28	do	Muck bar iron	United States
3338	36	do	Muck bar iron	Great Britain
3339	1	do	Steel ingots	United States
3340	7	do	Steel ingots	United States
3341		do	Steel ingots	United States
3342		do	Steel blooms	United States
3343		do	Mixed iron and steel	United States
3344		do	Mixed iron and steel	United States
3345		do	Mixed iron and steel	United States
3346		do	Mixed iron and steel	United States
3347		do	Mixed iron and steel	United States
3348		do	Mixed iron and steel	Continent of Europe
3349		do	Mixed iron and steel	Continent of Europe
3350		do	Mixed iron and steel	Continent of Europe
3351		do	Mixed iron and steel	Continent of Europe
3352		do	Mixed iron and steel	Great Britain
3353		do	Mixed iron and steel	Great Britain
3354	29	do	Bituminous coal	United States
3355		do	Bituminous coal	United States
3356		do	Bituminous coal	United States
3357		do	Bituminous coal	United States
3358	148	do	Bituminous coal	Dominion of Canada
3359	156	do	Bituminous coal	Continent of Europe
3360	170	do	Bituminous coal	Great Britain
3361	9	do	Coke	United States
3362	13	do	Coke	United States
3363	23	do	Coke	United States
3364	23	do	Coke	United States
3365	13	do	Coke	United States
3366		do	Coke	Continent of Europe
3367	42	do	Iron ore	United States
3368	45	do	Iron ore	United States
3369	49	do	Iron ore	United States
3370	99	do	Iron ore	United States
3371	72	do	Iron ore	United States
3372		Water boilers	Bituminous coal	United States
3373	9	Water boys	Pig iron	Northern district, U. S.
3374	10	do	Pig iron	Northern district, U. S.
3375	68	do	Pig iron	Northern district, U. S.
3376	66	do	Pig iron	Southern district, U. S.
3377	108	do	Pig iron	Southern district, U. S.
3378	3	do	Steel ingots	United States
3379	7	do	Steel ingots	United States
3380		do	Steel blooms	United States
3381		do	Steel rails	Continent of Europe
3382		do	Mixed iron and steel	United States
3383		do	Mixed iron and steel	United States
3384		do	Mixed iron and steel	United States
3385		do	Mixed iron and steel	United States
3386	107	do	Bituminous coal	United States
3387	23	do	Coke	United States
3388	28	do	Coke	United States
3389	12	do	Iron ore	United States
3390	41	do	Iron ore	United States
3391	42	do	Iron ore	United States
3392	44	do	Iron ore	United States

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.					Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.
		Different employés.	Days of work done.		Earnings.		Necessary employés.	Consequent average earnings per em- ployé.	
			Total.	Average.	Total.	Average.			
313	\$1.54½	2	524	262	\$903	\$452	1.87	\$484	3324
108	1.00½	2	236	118	237	119	2.19	108	3325
313	1.54	6	1,428	238	2,201	367	4.57	482	3326
92	.58	1	92	92	83	83	1.00	58	3327
99	2.27½	2	186	93	423	212	1.68	225	3328
156	4.76½	2	251	126	1,196	598	1.61	743	3329
99	.71	1	116	116	83	83	1.17	71	3330
156	.48½	2	251	126	122	61	1.61	76	3331
313	1.02	2	416	209	427	214	1.33	320	3332
155	1.10	1	121	121	133	133	0.78	170	3333
305	1.50	1	317	317	473	473	0.67	545	3334
365	1.60	1	301	301	578	578	0.99	584	3335
365	1.50	1	297	297	446	446	0.61	548	3336
313	2.07	8	773	97	1,501	200	2.47	647	3337
126	.95½	1	135	135	129	129	1.07	120	3338
365	1.75	13	500	28	874	67	1.37	636	3339
292	1.56	2	364	182	564	282	1.25	452	3340
235	1.75	5	1,052	210	1,843	369	4.48	412	3341
292	1.58	3	534	178	844	281	1.84	462	3342
365	2.50	1	335	335	838	838	0.93	912	3343
313	1.73½	2	828	164	509	255	1.05	543	3344
365	1.54½	3	1,183	378	1,749	583	3.11	563	3345
168	1.52½	4	854	29	539	135	2.10	256	3346
313	1.67½	8	2,232	279	3,744	468	7.13	525	3347
77	.58	1	84	84	49	49	1.09	45	3348
313	.32½	4	1,140	285	369	92	3.64	101	3349
92	.51½	5	450	90	236	47	4.99	47	3350
313	.39½	1	366	366	145	145	1.17	124	3351
48	.36½	1	56	56	20	20	1.17	17	3352
53	.52½	1	56	56	30	30	1.06	28	3353
365	1.21	1	53	53	64	64	0.15	441	3354
313	2.00	1	25	25	50	50	0.68	626	3355
365	1.64	1	286	286	460	460	0.78	599	3356
313	1.75	1	25	25	44	44	0.68	551	3357
365	1.00	1	353	353	353	353	0.97	365	3358
77	.93	1	78	78	75	75	1.01	74	3359
91	.97½	1	91	91	91	91	1.00	91	3360
92	1.25	2	91	46	114	57	0.99	115	3361
313	1.00	1	350	350	500	500	1.12	501	3362
365	1.00	1	311	311	311	311	0.85	365	3363
365	1.25	1	69	69	86	86	0.19	455	3364
365	1.20	1	328	328	394	394	0.90	438	3365
365	.38½	1	365	365	141	141	1.00	141	3366
365	1.15	2	609	305	706	353	1.07	423	3367
313	1.65	2	615	308	1,015	508	1.96	517	3368
365	1.55	1	359	359	556	556	0.98	565	3369
313	1.00	1	166	166	173	173	0.53	326	3370
365	1.50	1	50	50	75	75	0.14	548	3371
313	1.09	6	394	66	429	72	1.26	341	3372
365	.60½	1	345	345	209	209	0.95	221	3373
365	.85½	7	720	104	623	89	2.00	312	3374
365	.70½	8	627	78	500	63	1.71	291	3375
334	1.15	3	356	119	413	138	1.07	387	3376
365	.50	9	908	101	458	51	2.49	154	3377
133	.70	9	368	41	258	29	2.79	93	3378
230	.60	6	761	127	466	78	3.31	141	3379
230	.60	3	20	7	12	4	0.69	138	3380
78	.38½	1	73	73	28	28	0.94	30	3381
313	.65	1	17	17	11	11	0.65	203	3382
156	.90	5	110	22	99	20	0.71	140	3383
313	.80	1	36	36	29	29	0.12	252	3384
313	1.25	4	853	213	1,067	267	2.73	302	3385
313	1.75	2	130	65	227	114	0.42	547	3386
313	.40	2	188	94	75	38	0.69	125	3387
313	.63½	4	196	49	124	31	0.63	196	3388
313	1.20	2	505	253	703	351	1.90	372	3389
313	.68½	5	625	125	416	83	2.06	208	3390
313	.47	30	4,950	165	2,315	77	15.81	146	3391
217	.75	1	210	210	167	167	0.97	163	3392

TIME AND EARNINGS BY OCCUPATIONS—Continued.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.				Condition if workmen had continuous em- ployment.		Mas- ter- ial num- ber.	
		Different employes.	Days of work done.		Earnings.		Necessary employes.		Consequent average earnings per em- ploye.
			Total.	Average.	Total.	Average.			
313	\$0.75	1	186	186	963	963	0.43	\$214	3383
313	.50	1	68	68	34	34	0.22	157	3384
313	.50	9	992	106	538	60	2.04	178	3385
313	1.35	7	357	51	487	70	1.14	427	3386
202	1.55	1	130	130	177	177	0.64	257	3387
313	2.00	1	20	20	40	40	0.06	626	3388
313	1.75	2	406	248	568	434	1.28	548	3389
313	1.50	4	153	39	231	58	0.50	460	3390
01	.75	2	50	30	45	23	0.45	68	3391
365	2.08	4	235	59	460	122	0.64	780	3392
365	2.00	3	700	233	1,511	504	2.08	720	3393
365	1.50	2	501	250	884	444	1.02	868	3394
181	1.75	3	333	111	569	190	1.84	220	3395
365	2.10	2	700	355	1,495	748	1.94	770	3396
865	1.40	2	475	238	600	325	1.30	514	3397
01	.50	1	91	91	54	54	1.00	54	3398
313	1.50	2	278	139	416	208	0.89	468	3399
230	2.25	2	413	207	820	405	1.80	517	3400
202	1.50	2	225	113	338	160	1.11	363	3401
132	2.40	3	328	109	786	262	2.48	316	3402
230	2.21	4	408	125	1,102	276	2.17	600	3403
313	2.10	3	685	222	1,456	485	2.23	856	3404
313	2.12	4	1,284	310	2,600	672	4.04	866	3405
313	1.62	3	638	213	1,634	545	2.04	867	3406
79	.71	2	165	83	131	66	2.34	96	3407
365	.25	3	180	60	33	13	0.41	92	3408
155	.75	1	23	23	17	17	0.15	113	3409
182	2.40	4	242	61	581	145	1.83	217	3420
230	2.65	3	800	130	1,031	344	1.70	808	3421
202	2.30	1	201	201	456	456	1.00	456	3422
313	1.70	2	767	256	1,309	426	2.45	534	3423
313	2.00	1	217	317	634	634	1.01	626	3424
313	2.23	2	292	146	653	327	0.83	790	3425
313	2.30	1	313	313	720	720	1.00	720	3426
313	2.30	1	313	313	720	720	1.00	720	3427
313	2.03	2	333	167	677	339	1.06	626	3428
365	1.07	1	265	265	720	720	1.00	720	3429
185	1.55	3	722	241	1,105	268	1.28	559	3430
365	1.50	2	442	221	967	484	1.70	850	3431
181	1.75	2	354	177	620	310	1.06	317	3432
123	1.25	2	215	108	268	134	1.78	152	3433
184	1.30	6	800	134	1,046	174	4.38	228	3434
365	1.35	3	780	260	1,015	338	2.14	475	3435
90	.64	1	70	70	51	51	0.88	58	3436
91	.64	4	340	87	224	56	3.84	56	3437
91	.61	2	182	91	111	56	2.06	66	3438
91	.36	6	521	87	190	32	5.73	33	3439
135	.73	4	540	135	396	99	4.00	99	3440
155	1.75	4	310	78	556	139	2.04	270	3441
286	2.02	5	778	158	1,508	320	2.76	580	3442
90	.88	3	103	69	175	63	2.00	88	3443
90	.96	2	335	112	321	166	2.38	96	3444
313	1.80	2	407	136	733	244	1.30	564	3445
230	1.82	0	1,130	188	2,055	343	4.92	414	3446
77	.64	3	210	70	144	49	2.73	53	3447
27	.67	1	29	29	19	19	1.07	19	3448
78	.57	2	143	72	62	41	1.83	45	3449
201	1.80	3	83	42	149	75	0.41	303	3450
210	1.72	6	446	74	765	129	1.94	50	3451
77	.78	2	151	76	115	58	1.06	50	3452
246	1.75	2	481	241	842	421	1.68	501	3453
313	1.70	1	218	218	291	291	0.79	267	3454
213	1.77	7	1,114	159	1,040	283	3.55	824	3455
247	1.80	1	378	378	623	623	1.72	473	3456
155	1.64	5	841	88	576	115	2.20	261	3457
77	.64	6	409	78	283	47	4.10	46	3458
313	.61	13	2,217	171	1,421	109	7.05	201	3459
02	.41	24	1,460	45	623	19	15.05	40	3460
313	.70	2	905	302	640	213	2.80	221	3461

[illegible]

TIME AND EARNINGS BY OCCUPATIONS—Concluded.

one establishment cannot be compared with those for another (except as to daily rate of pay), unless tion, Tables I to XI. Where no establishment number is given no statement of cost of production these numbers, note should be taken of the industry, as a new series of numbers is used for each.]

Work- ing days in the period.	Actual daily earnings, or daily rate near- est to average daily earnings.	Actual condition for period.					Condition if workmen had continuous em- ployment.		Mar- gin- al num- ber.
		Different employéa.	Days of work done.		Earnings.		Necessary employéa.	Consequent average earnings per em- ployé.	
			Total	Average.	Total	Average.			
70	\$0.62½	2	146	73	\$01	\$46	1.85	\$49	3462
48	.61	2	92	46	56	28	1.92	29	3433
53	.60½	5	223	45	135	27	4.21	32	3464
158	1.75	1	154	154	269	269	0.07	276	3465
313	1.69	2	318	161	563	278	1.06	530	3466
313	2.01	2	833	167	670	335	1.06	630	3467
313	1.00	2	612	306	611	306	1.95	312	3468
91	1.21½	1	78	78	97	97	0.86	113	3469
365	.58	2	38	19	22	11	0.10	211	3470
313	1.60	1	25	25	38	38	0.06	476	3471
313	1.60	1	190	190	296	296	0.01	491	3472
313	1.16	1	286	286	332	332	0.91	363	3473
313	.87	16	3,092	250	3,481	218	12.75	273	3474
91	.61	1	64	64	38	38	0.70	54	3475
90	.76	2	258	129	198	99	2.61	76	3476
150	1.07½	20	2,614	131	2,816	141	16.75	168	3477
99	.84	4	368	92	309	77	3.72	83	3478
313	1.58½	1	240	240	380	380	0.77	496	3479
313	3.00	1	1	1	3	3	0.00	939	3480
313	2.25	1	11	11	25	25	0.04	711	3481
48	.49	8	309	39	153	19	6.44	24	3482
365	1.53	5	1,063	213	1,625	325	2.91	558	3483
365	1.67	5	909	183	1,425	235	2.49	572	3484
365	2.25	1	291	291	655	655	0.80	822	3485
365	2.00	1	821	821	642	642	0.88	730	3486
122	1.50	1	122	122	183	183	1.00	183	3487
313	1.73	1	227	227	389	389	0.73	536	3488
313	2.72	1	313	313	852	852	1.00	852	3489
251	2.25	1	263	263	596	596	1.05	596	3490
313	.76	16	1,153	72	874	55	2.69	237	3491

REPORT OF THE COMMISSIONER OF LABOR.

STATEMENT OF ACTUAL AND THEORETICAL TIME AND EARNINGS BY INDUSTRIES.

Working days in the period are shown for each occupation, but here only the establishment as a whole. The actual daily earnings, or daily rate of Table XII here, of course, becomes actual average daily earnings, earnings divided by the total days of work done in each establishment.]

A.—PIG IRON.

	Length of the period.	Actual average daily earnings.	Actual condition for period.				Condition if workers had continuous employment.		
			Different employees.	Days of work done.		Earnings.		Necessary employees.	Correspondent average earnings per employee.
				Total.	Average.	Total.	Average.		
Northern district of the United States.	1 year	\$2.08	\$10	25,735	82	\$52,238	\$160	71.18	\$734
do	1 year	1	88	88	88	\$75,519	149	127.65	882
do	1 year	1	90	90	90	\$42,371	182	73.76	876
do	1 year	1	108	108	108	\$49,296	154	83.72	869
do	1 year	1	180	180	180	\$8,272	304	100.22	833
do	1 year	1	180	180	180	\$31,593	277	80.78	829
do	1 year	1	(f)	(f)	(f)	\$187,477	(g)	(f)	(f)
do	1 year	1	178	178	178	\$40,022	268	70.32	369
do	6 months	1	96	96	96	\$30,744	168	90.98	366
do	3 mos	1	114	114	114	\$7,161	167	74.21	231
do	4 months	1	75	75	75	\$7,524	98	52.38	164
do	3 months	1	65	65	65	\$4,729	99	35.44	133
do	1 year	1	58	58	58	\$44,287	99	90.44	439
Western district of the United States.	1 year	1	32	32	32	\$64,968	96	105.59	429
do	1 year	1	26	26	26	\$15,178	181	85.22	432
do	11 mos	1	76	76	76	\$23,287	95	52.05	448
do	6 months	1	(f)	(f)	(f)	\$54,432	95	(f)	(f)
do	3 months	1	78	78	78	\$1,896	53	90.14	43
do	3 months	1	110	110	110	\$,866	78	95.11	84
do	4 mos	1	18,137	182	182	\$18,412	134	124.56	187
do	8 months	1	11,818	79	79	\$7,761	53	180.63	86
do	3 months	1	39,596	79	79	\$12,796	49	221.68	96

a This amount includes the wages in the production of both Bessemer and foundry pig iron, besides \$10,733 paid to outside persons for labor done under contract, while the statement for this establishment on page 51 is for Bessemer pig iron only.

b In addition \$2,667 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 52.

c The earnings here shown are for one year. The statement for this establishment on page 51 is for six months only.

d The earnings here shown include amounts paid a few employees not in the pig iron department which it was impossible to exclude. The statement for this establishment on page 51 is for pig iron only.

e The earnings here shown are for one year. The statement for this establishment on page 51 is for nine months only.

f Some employees were paid by the quantity, hence the daily rate of pay and days of work done cannot be given.

g Number of employees in a few occupations not given.

h The earnings here shown are for one year. The statement for this establishment on page 52 is for three months only.

i In addition \$1,361 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 52 and 592.

j The earnings shown here and for this establishment on page 51, although for the same length of time, are for different periods.

k The earnings shown here and for this establishment on page 51, although for the same length of time, are for different periods.

l In addition \$140 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 52 and 592.

m In addition \$2,571 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 52 and 592.

n In addition \$3,624 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 52 and 592.

o In addition \$103 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 52 and 593.

p The earnings here shown are for eleven months only. The statement for this establishment on page 52 is for eighteen months.

q The earnings here shown are for six months only. The statement for this establishment on page 52 is for one year.

r The earnings here shown are for three months. The statement for this establishment on page 51 is for one month or 97.

s The earnings here shown are for only a part of the employees, but they are thought to be fairly representative.

t The earnings here shown are for three months only. The statement for this establishment on page 51 is for six months.

TABLE XIV.—SUMMARY OF ACTUAL AND THEORETICAL TIME AND EARNINGS BY INDUSTRIES—Continued.

[In the preceding table the working days in the period are shown for each occupation, but here only the length of the period for the establishment as a whole. The actual daily earnings, or daily rate nearest to average daily earnings of Table XII here, of course, becomes actual average daily earnings, as it is the quotient of the total earnings divided by the total days of work done in each establishment.]

B.—HUCK BAR IRON.

Establishment number.	Locality.	Length of the period.	Actual average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.		
				Difference in employ. ca.	Days of work done.		Earnings.		Necessary employ. ca.	Consequent average earnings per employé.
					Total.	Average.	Total.	Average.		
9	United States.....	1 year ..	\$2.22½	160	24,635	148	\$34,896	\$325	\$2.14	\$680
17	do	1 year ..	2.80½	284	26,241	92	a 59,274	241	\$1.48	747
26	do	1 year ..	1.91½	272	34,080	125	b 65,204	240	117.38	555
7	do	6 months	2.38½	247	10,777	44	23,682	194	73.68	349
88	Great Britain.....	4 months	.93	17	1,900	117	c 1,853	100	19.31	83

a In addition \$1,642 was paid to outside persons for labor done at \$1.31 per day, which is included in the statements for this establishment on pages 113 and 503.

b In addition \$1,697 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 113 and 503.

c The earnings here shown are for only a part of the employees for four months. The statement for this establishment on page 113 is for all the employees for one year.

C.—FINISHED BAR IRON.

8	United States.....	1 year ..	\$2.44	87	19,043	196	a \$48,422	\$470	\$2.79	\$729
9	do	1 year ..	2.68 $\frac{1}{2}$	86	11,870	126	31,359	308	22.62	708
29	Great Britain.....	4 months	1.25	167	13,694	95	b 17,393	118	122.63	125

a The earnings here shown include amounts paid a few employees not in the finished bar iron department. The statement for this establishment on page 127 is for finished bar iron only.

b The earnings here shown are for four months only. The statement for this establishment on page 127 is for one year.

D.—STEEL INGOTS.

1	United States.....	1 year ..	\$2.63	321	49,043	53	\$99,891	\$185	155.29	\$643
7	do	9 $\frac{1}{2}$ mos..	3.02 $\frac{1}{2}$	295	32,161	109	a 97,040	320	—	701
7	do	5 $\frac{1}{2}$ mos..	2.35	219	15,064	72	b 36,848	109	115.06	329
5	do	6 months	1.78 $\frac{1}{2}$	71	3,174	45	c 5,963	80	24.07	226
—	Continent of Europe..	3 months	.71	88	5,740	65	4,998	46	74.53	85
—	do	3 months	.47	256	14,683	57	9,830	33	184.23	63
—	do	1 month	.74	180	3,316	18	2,452	13	123.16	39

a The earnings here shown are for nine and one-half months only. The statement for this establishment on page 155 is for one year.

b The earnings here shown are for only a part of the employees for twenty-four weeks. The statement for this establishment on page 155 is for all the employees for twenty-five weeks.

c The earnings here shown are for five months and probably for only a part of the employees. The statement for this establishment on page 155 is for all the employees for six months.

E.—STEEL BILLETS.

—	United States.....	6 months	\$2.06	299	29,261	79	\$66,284	\$151	143.87	\$619
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F.—STEEL BLOOMS.

—	United States.....	9 $\frac{1}{2}$ mos..	\$2.43	451	37,043	83	\$98,944	\$190	133.63	\$578
—	do	5 $\frac{1}{2}$ mos..	3.13	195	13,191	78	24,228	165	116.79	291

G.—STEEL RAILS.

—	Continent of Europe..	3 months	\$1.03 $\frac{1}{2}$	58	2,587	65	\$1,896	\$71	46.61	\$94
—	do	3 months	.72	398	20,977	84	15,097	39	208.94	66

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TABLE XIV.—SUMMARY OF ACTUAL AND THEORETICAL TIME AND EARNINGS BY INDUSTRIES—Concluded.

[In the preceding table the working days in the period are shown for each occupation, but here only the length of the period for the establishment as a whole. The actual daily earnings, or daily rate nearest to average daily earnings of Table XII here, of course, becomes actual average daily earnings, as it is the quotient of the total earnings divided by the total days of work done in each establishment.]

K.—COKE.

Establishment number.	Locality.	Length of the period.	Actual average daily earnings.	Actual condition for period.				Condition if workmen had continuous employment.	
				Different employes.	Days of work done.		Earnings.		Necessary employes.
					Total.	Average.	Total.	Average.	
13	United States.....	1 year...	\$1.76	307	29,729	97	\$52,338	\$170	85.01
19	do.....	1 year...	1.724	154	18,124	118	31,240	203	57.96
23	do.....	1 year...	1.234	163	13,857	83	17,103	103	44.15
28	do.....	1 year...	1.294	102	7,688	43	8,808	61	32.47
29	do.....	1 year...	1.244	37	7,887	213	9,768	286	21.70
4	do.....	3 months	1.844	234	5,803	25	8,032	24	63.19
—	Continent of Europe	1 year...	.474	57	9,191	161	4,354	76	25.20

a In addition \$3,522 was paid to outside persons for labor done under contract, which is included in the statement for this establishment on page 230.

b The earnings here shown are for three months only. The statement for this establishment on page 236 is for one year.

L.—IRON ORE.

			(a)	(b)	(a)	(a)	\$51,925	(b)	(a)	(a)
13	United States.....	1 year	\$2.074	265	32,313	122	64,984	\$253	102.25	\$649
41	do.....	1 year	1.134	181	20,526	113	23,337	129	83.10	358
42	do.....	1 year	1.31	610	103,551	165	124,491	216	333.61	413
43	do.....	1 year	1.314	202	20,719	79	27,278	184	66.17	412
45	do.....	1 year	1.60	276	32,093	120	52,332	191	105.43	501
46	do.....	1 year	1.47	208	48,009	182	72,018	269	156.10	461
48	do.....	1 year	1.30	85	5,805	69	7,556	116	18.68	407
51	do.....	1 year	1.33	110	11,088	101	14,749	134	35.42	416
56	do.....	1 year	1.30	42	4,578	109	6,955	142	14.12	421
59	do.....	1 year	1.034	63	7,791	119	8,032	124	24.83	324
60	do.....	1 year	1.114	183	15,570	83	17,322	83	49.74	348
72	do.....	1 year	1.93	784	71,283	91	138,926	177	227.68	619
44	do.....	8 mos.	1.30	38	6,490	171	8,428	222	29.81	282
61	do.....	6 months	1.15	43	2,746	61	3,183	70	17.71	178
64	do.....	6 months	.864	55	4,106	75	3,551	63	26.83	135
76	Continent of Europe	1 year	.63	14	4,141	290	5,440	246	13.23	290
77	do.....	1 year	.94	10	1,345	75	1,267	70	4.29	235
80	do.....	6 months	.704	202	23,537	141	20,126	100	130.75	111

a Some employes were paid by the quantity, hence the daily rate of pay and days of work done cannot be given.

b Number of employes in a few occupations not given.

c In addition \$1,001 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 232 and 304.

d In addition \$1,503 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 232 and 304.

e In addition 21 or more contractors were employed, each of whom agreed to get out ore on cars at \$1.10 per ton, and was credited at the end of each month with the tonnage mined. His men were paid each month by the company and their wages are included in the above. The wages so paid were deducted from the contractor's gross earnings and the remainder was paid to him as his profit. These profits, not appearing here, are included, of course, in the statement for this establishment on page 232.

f Includes \$1,227 expended for labor on permanent improvements, which could not be eliminated from the different occupations given above.

g The earnings here shown are for one mine only. The statement for this establishment on page 252 is for two mines.

h The earnings here shown are for one year. The statements for this establishment on pages 252 and 305 are for nine months only.

i In addition \$433 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 232 and 305.

j In addition \$1,137 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 232 and 305.

k In addition \$4,275 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 232 and 306.

l In addition \$18 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 232 and 305.

m In addition \$103 was paid to outside persons for labor done under contract, which is included in the statements for this establishment on pages 232 and 306.

n The earnings here shown are for only a part of the employes, while the statement for this establishment on page 232 is for the entire number.

o The earnings here shown are for six months. The statement for this establishment on page 233 is for three months only.

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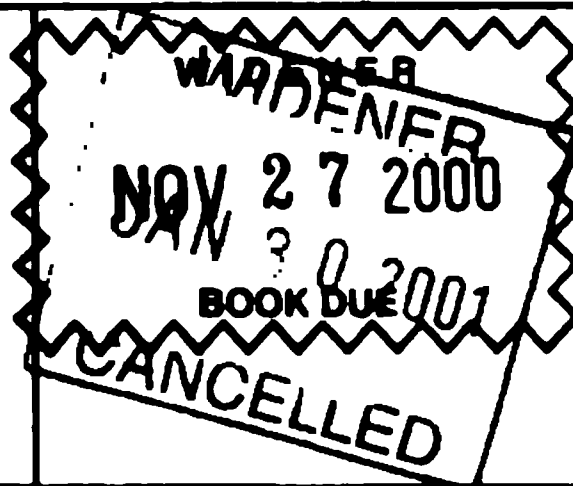




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